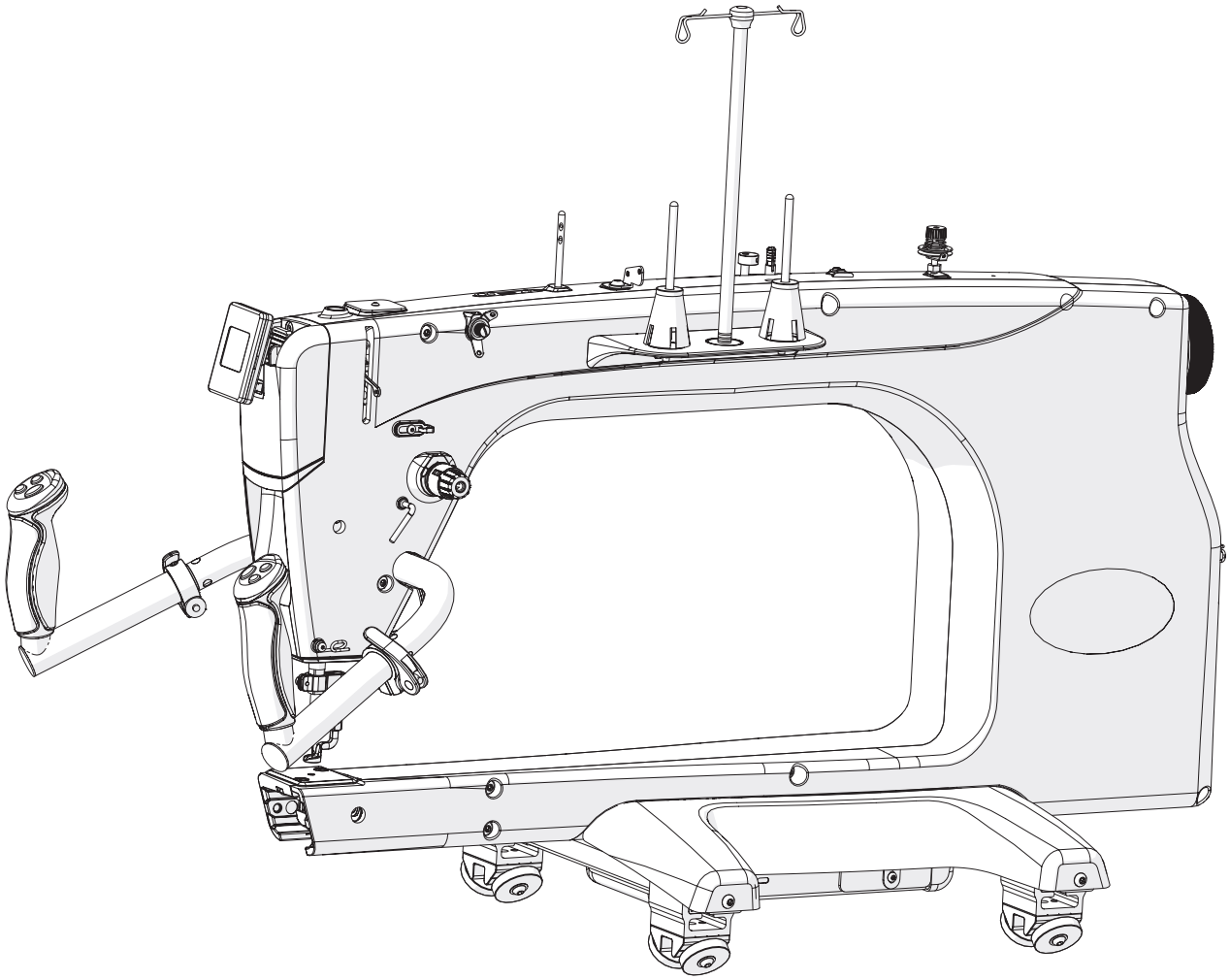
Q'nique 21



Version 2.8

MADE BY Grace

Important Safety Instructions

Please read all these safety instructions before using this machine.

DANGER - To reduce the risk of electric shock, do not leave the machine unattended when plugged in. Always unplug this machine from the electric outlet when not in use and before cleaning.

WARNING - To reduce the risk of burns, fire, electric shock, or injury to persons:

- Do not allow this machine to be used as a toy. Pay close attention when this machine is used by or near children.
- Use this machine only for its intended use as described in this manual. Use only attachments recommended by the manufacturer as contained within this manual.
- Do not operate this machine if it has a damaged cord or plug, it is not working properly, or it has been dropped, damaged, or dropped into water. Return the machine to the nearest authorized dealer or service center for examination, repair, or electrical or mechanical adjustment.
- Never operate the machine with any air openings blocked. Keep ventilation openings of the quilting machine free from the accumulation of lint, dust, and loose cloth.
- Never drop or insert any object into any opening.
- Do not use outdoors.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- To disconnect, turn all controls to the off position, then remove the plug from the outlet by grasping the plug. Do not pull on cord.
- Keep fingers away from all moving parts. Special care is required around the quilting machine needle.
- Always use the proper needle plate. The wrong plate can cause the needle to break.
- Do not use bent needles.
- Do not pull or push fabric while stitching. It may deflect the needle causing it to bend or break.
- Switch the quilting machine off when making any adjustments in the needle area, such as threading the needle, changing the needle, or changing the presser foot, etc.
- Always unplug the quilting machine from the electrical outlet when removing covers, lubricating, or when making any other user servicing adjustments mentioned in the instruction manual.

If using this machine in an area with inconsistent input power, it is recommended that a surge protector is connected to a backup battery supply.

Connect this machine to a properly grounded outlet only. See "Grounding Instructions" (next page).

SAVE THESE INSTRUCTIONS

Do not discard box or packaging

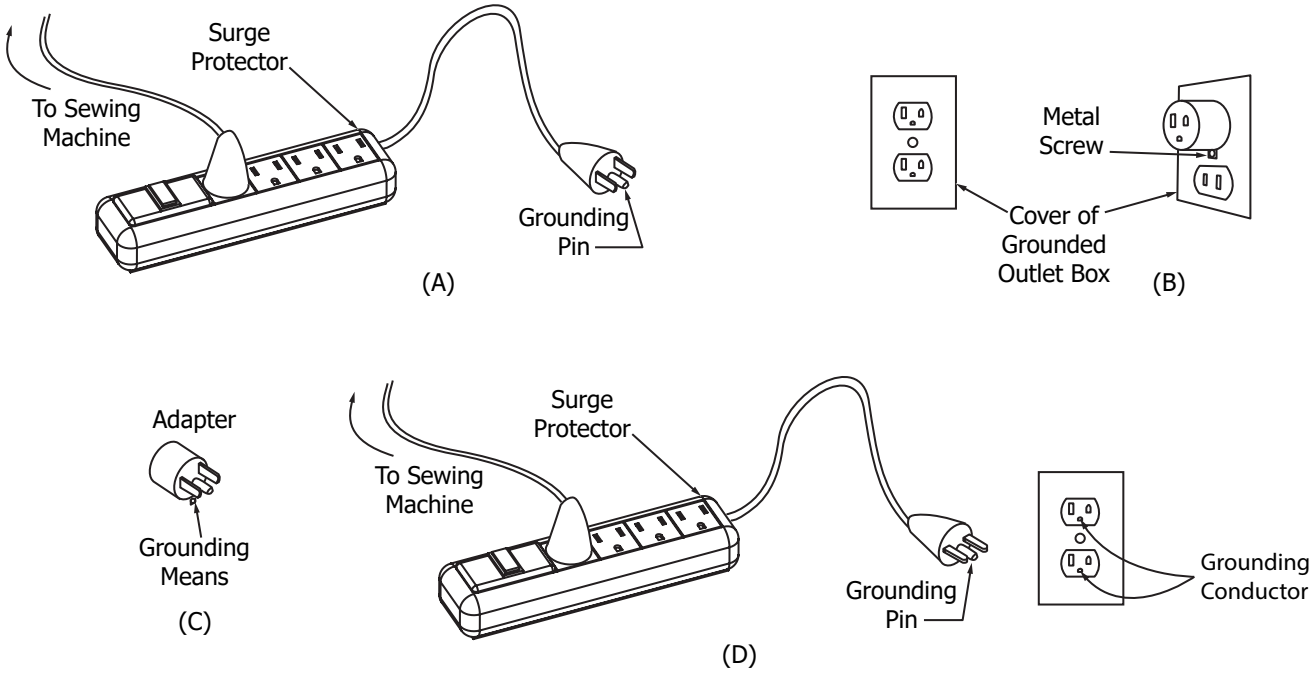
GROUNDING INSTRUCTIONS

This product must be grounded. In the event of malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord that has an equipment-grounding conductor and a grounding plug. Plug the cord from the quilting machine into a surge protector. The surge protector must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green, with or without yellow stripes, is the equipment-grounding conductor. If repair or replacement of the cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

Do not modify the plug provided with the product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Grounding Methods

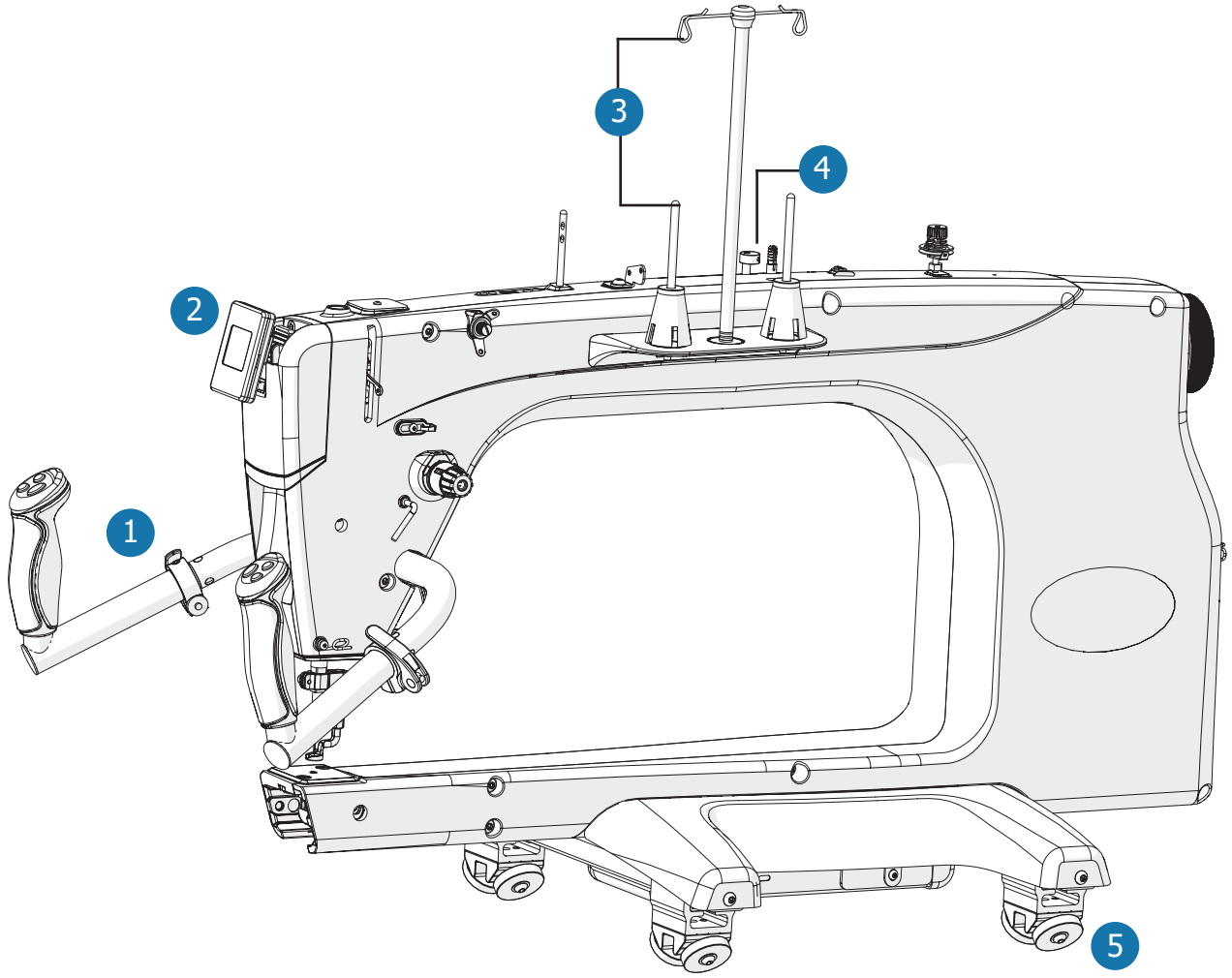


This product is for use on a nominal 120 V circuit, and has a grounding pin as illustrated above (A). A temporary adapter, shown in (B) and (C), may be used to connect this plug to a 2-pole receptacle (B) if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by the metal screw.

A qualified electrician should be consulted if there is any doubt as to whether an outlet box is properly grounded.

Table of Contents

Machine Specifications



Product Dimensions

Body:

- Height: 515 mm, or 20.25 inches
- Width: 395 mm, or 15.5 inches
- Length: 824 mm, or 32.4 inches
- Weight: 24.5 kg, or 54 lbs

Quilting Arm:

- Height: 266.7 mm, or 10.5 inches
- Width: 533.4 mm, or 21 inches

Electrical

- Input Voltage: 110-220 VAC
- Peak Power Consumption: 300 W

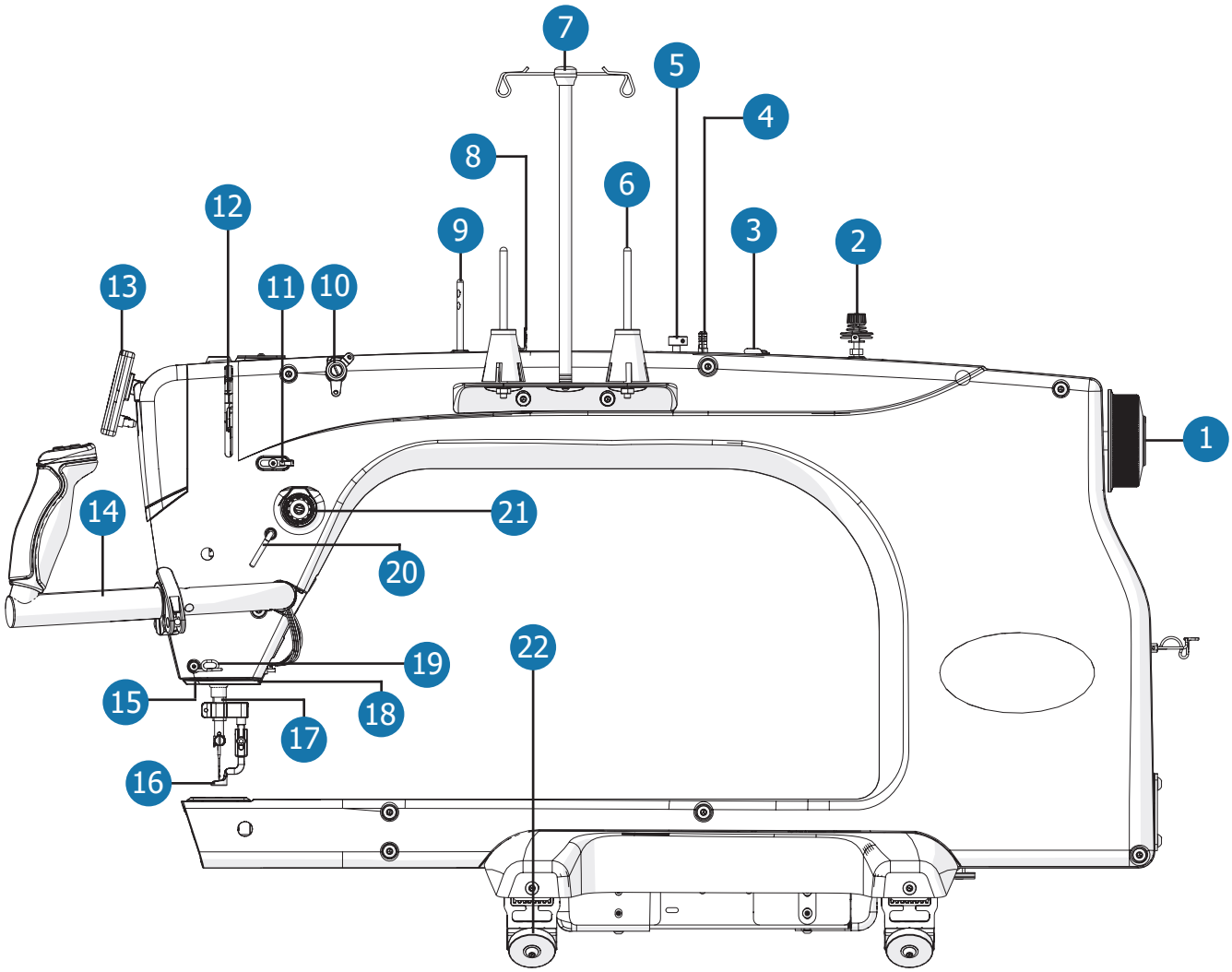
Features

1. Ergonomic handles and handlebars for efficient, extended use (page 17)
2. OLED Display (page 19)
3. Dual thread mast and stands for quilting and winding bobbin at the same time
4. Built in bobbin winder (page 27)
5. Dual wheels for added stability (page 13)

- SPM range of 90 to 1800 stitches
- Regulated stitching

Machine Layout

Quilting Machine (Side View)



1. **Hand Wheel**
   Raises and lowers the needle.
2. **Bobbin Thread Tensioner** (page 27)
   Tensions thread for winding a bobbin.
3. **Bobbin Thread Cutter** (page 27)
   Cuts wound bobbin thread.
4. **Bobbin Stand** (page 27)
   Positions bobbin for winding.
5. **Bobbin Cam** (page 27)
   Starts and stops bobbin winding.
6. **Thread Stand** (page 31)
   Holds a cone of thread.
7. **Thread Mast** (page 31)
   Guides the thread for quilting.
8. **Bobbin Thread Guide** (page 27)
   Guides thread for winding a bobbin.
9. **Thread Guide Rod** (page 31)
   Positions thread when quilting.
10. **Small Thread Tensioner** (page 31)
    Tensions thread when quilting.
11. **Thread Guide** (page 31)
    Positions thread when quilting.
12. **Take-Up Lever** (page 31)
    Tensions thread when quilting.

13 **Display** (page 19)
Provides access to quilting options.

14 **Handlebar Controls** (page 17)
Controls machine functions.

15 **Lamp** (page 48)
Lights up needle area.

16 **Hopping Foot** (page 57)
Presses fabric down when quilting.

17 **Needle Bar** (page 54)
Holds the needle when quilting.

18 **Thread Cutter** (page 31)
Cuts excess thread after threading machine.

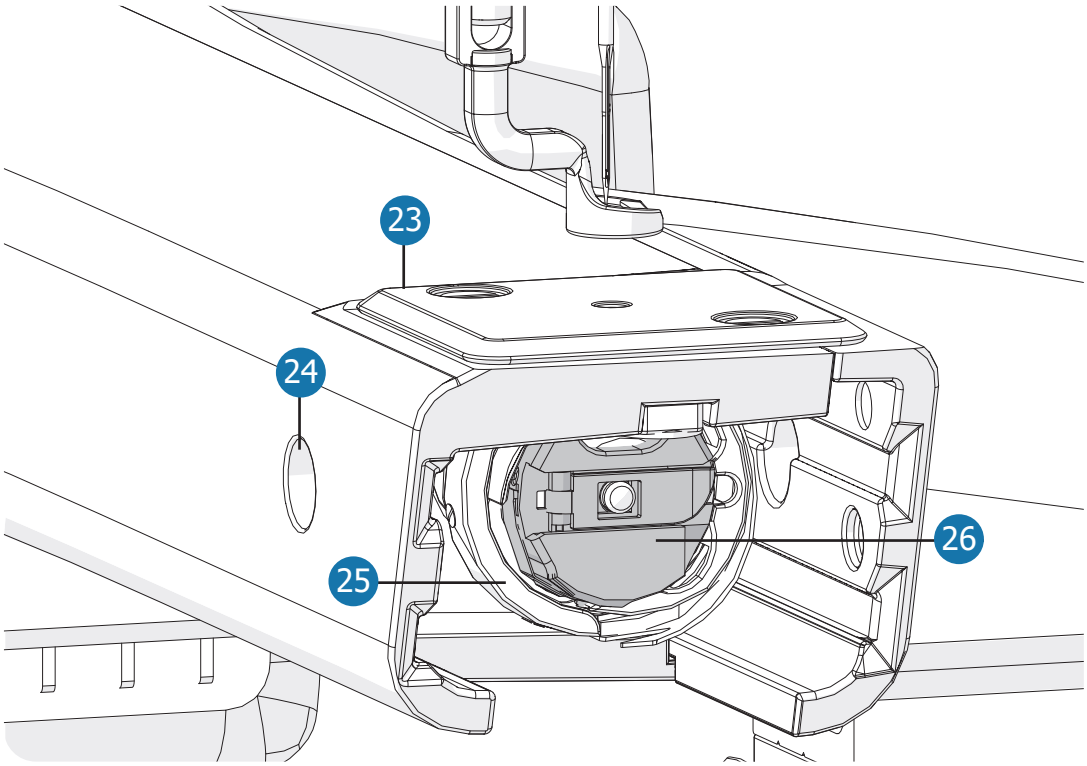
19 **Bottom Thread Guide** (page 31)
Positions thread when quilting.

20 **Thread Guide** (page 31)
Positions thread when quilting.

21 **Large Thread Tensioner** (page 44)
Adjusts thread tension.

22 **Machine Wheels** (page 13)
Rides the bottom carriage rails and moves the machine back and forth on the frame.

Hook Assembly (Front View)



23 **Needle Plate** (page 62)
Covers top hook assembly access.

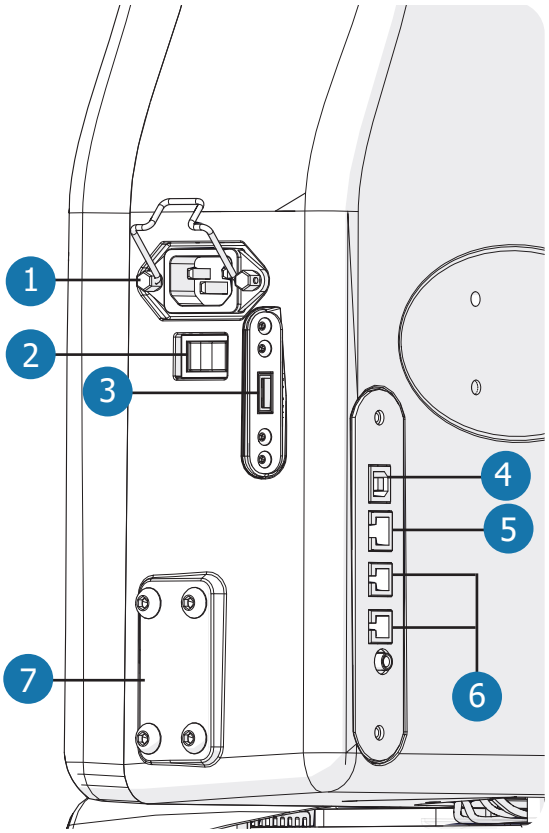
24 **Timing Cut-Out** (page 76)
Accesses hook assembly set screws.

25 **Hook Assembly** (page 29)
Holds the bobbin case and hooks the top thread to create stitches.

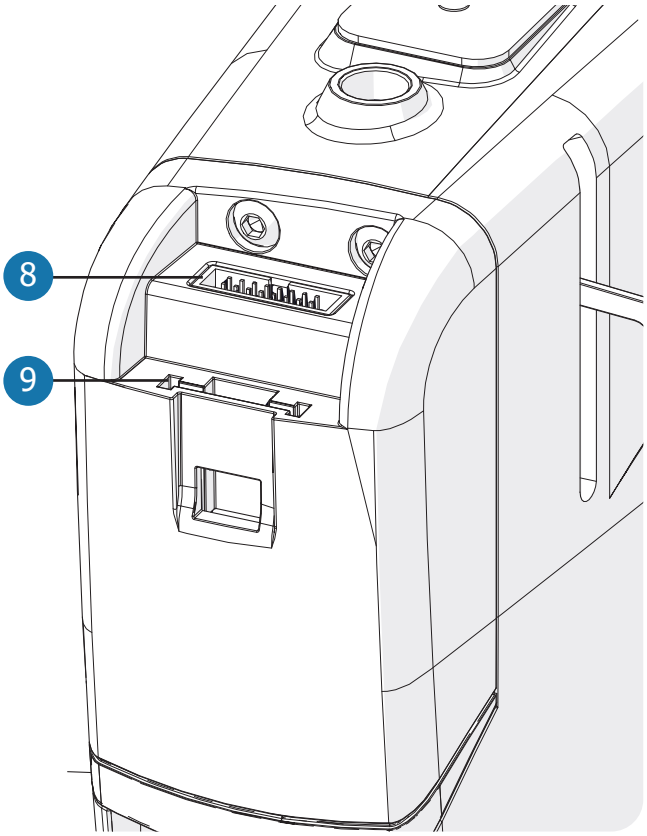
26 **Bobbin Case** (page 29)
Holds M class bobbin and controls bottom thread tension.

Ports and Plug-Ins

Quilting Machine (Rear View)



Quilting Machine (Front View)



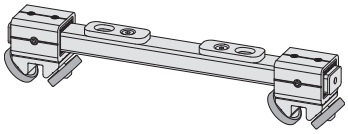
1. **Power Port with Retainer** (page 25)
   Connects and holds power cable to the machine.
2. **Power On/Off Switch** (page 25)
   Turns machine on and off.
3. **Quilt Motion Tablet Port**
   For optional automation accessory.
4. **USB Connector Port**
   For updating only.
5. **Quilt Motion Port**
   For optional automation accessory.
6. **Encoder Ports** (page 21)
   Connects encoders to machine.
7. **Back Handle Port Cover**
   For optional back handle accessory.
8. **Display Cable Port** (page 19)
   Connects display cable to machine.
9. **Display Clip Port** (page 19)
   Connects display clip to machine.

Included Parts & Tools

Please make sure all pieces are included in your kit.

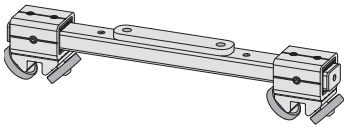
Box 1

Back Wheel Support Assembly



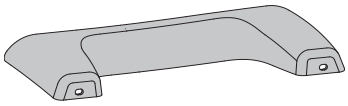
SMP-09-13185
(See page 13)

Front Wheel Support Assembly



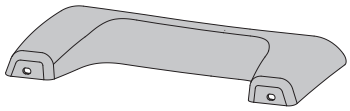
SMP-09-13184
(See page 13)

Plastic Base - Right



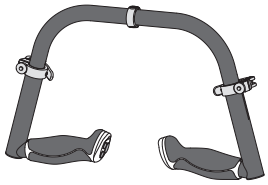
SMP-05-11705
(See page 16)

Plastic Base - Left



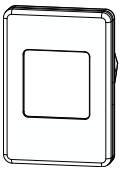
SMP-05-11704
(See page 16)

Handlebar Assembly



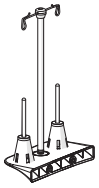
SMP-09-14066
(See page 17)

OLED Display with Cables



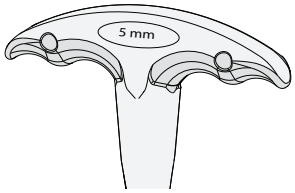
SMP-09-13562
(See page 19)

Thread Mast Assembly



SMP-09-13183
(See page 20)

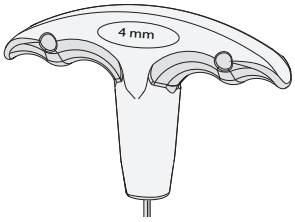
T-handle Allen Wrench 5 mm



HDW-03-11732

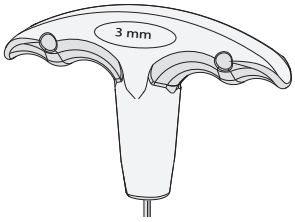
Box 2

T-handle Allen Wrench 4 mm



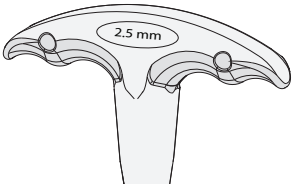
HDW-03-13114

T-handle Allen Wrench 3 mm



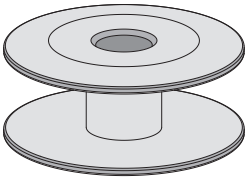
HDW-03-13115

T-handle Allen Wrench 2.5 mm



HDW-03-13116

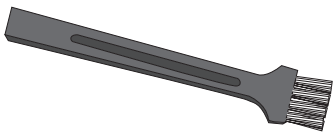
M Class Bobbin (x3)
(two pre-installed)



SMP-08-10070
(See page 29)

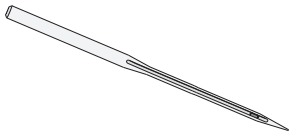
Box 2 Continued

Lint Brush



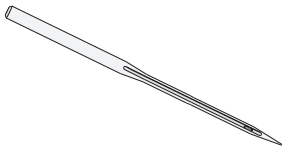
SMP-03-10170
(See page 51)

Needle Size 18 (x11)
(one pre-installed)



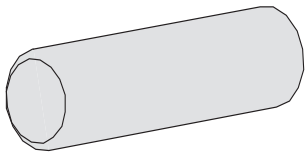
ACC-01-11025
(See page 54)

Needle Size 16 (x10)



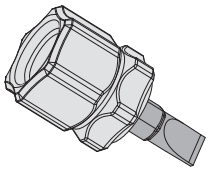
ACC-01-11024
(See page 54)

Needle Magnet



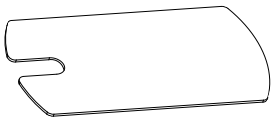
SMP-09-13837
(See page 54)

Flat-head Screwdriver



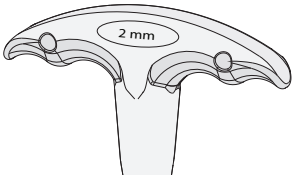
SMP-03-10169
(See page 62)

Hopping Foot Height tool



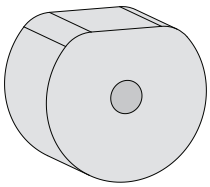
SMP-03-12171
(See page 57)

T-handle Allen Wrench 2 mm



HDW-03-13117

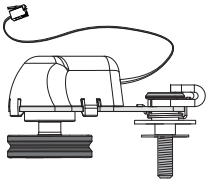
Timing Spacer



SMP-03-11320
(See page 76)

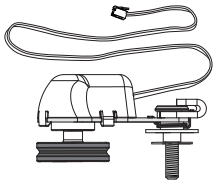
Box 3

Upper Encoder
(silver spring)



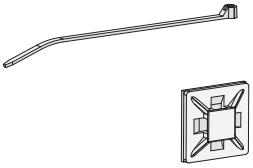
SMP-09-10668
(See page 21)

Lower Encoder
(black spring)



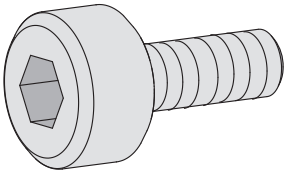
SMP-09-13427
(See page 23)

Zip Tie (x2)
Zip Tie Mount (x2)



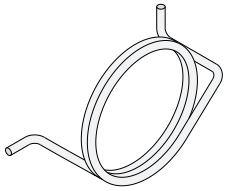
MIS-08-10805
(See page 24)

Hopping Foot Screw



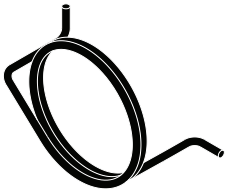
HDW-03-10966
(See page 57)

Upper Encoder Spring (silver)



HDW-03-10216
(See page 70)

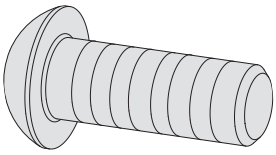
Lower Encoder Spring (black)



HDW-03-10671
(See page 70)

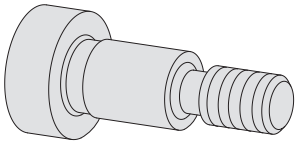
Box 4

SBHCS Screw
M6 x 20 mm (x2)



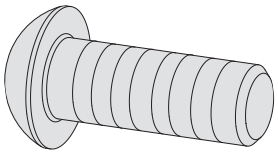
HDW-03-10088
(See page 13)

Shoulder Bolt
M6 (x2)



HDW-03-12206
(See page 13)

SBHCS Screw
M6 x 16 mm (x6)

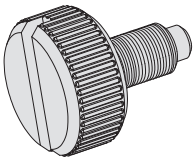


HDW-03-10974
(See page 16, 20)

Power Cord

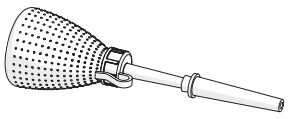
SMP-02-10845
(See page 25)

M3 Thumb Screw
(needle bar spare)



HDW-03-11736
(See page 54)

Oil Bottle



SMP-09-13888
(See page 51)

Out-of-the-Box Assembly

These steps are for assembling the machine after it is first removed from the packaging materials. Please set up your quilting frame prior to machine assembly.

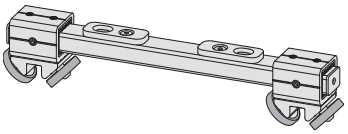
Tip: For additional help, scan the QR code below with the camera on your smart phone to visit our online support videos!

https://www.graceframe.com/en/resources/support/videos

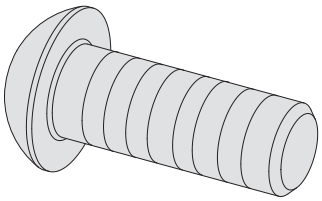
Installing the Wheels

Set up the frame before assembling the machine.

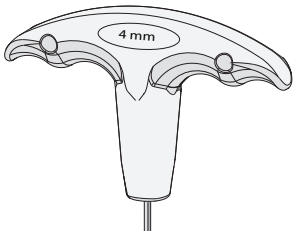
Parts & Tools Needed:



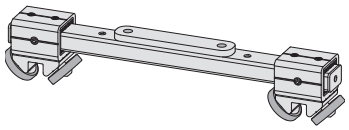
Back Wheel Support Assembly



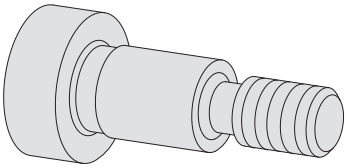
SBHCS Screw M6 x 20 mm (x2)



T-handle Allen Wrench 4 mm



Front Wheel Support Assembly

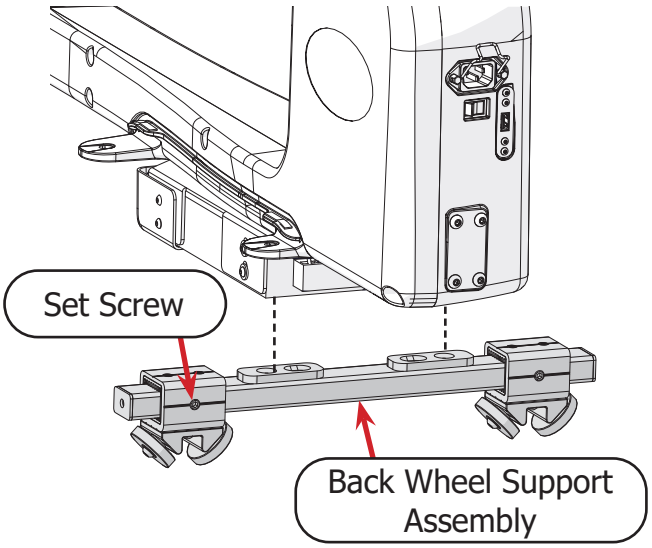


Shoulder Bolt M6 (x2)

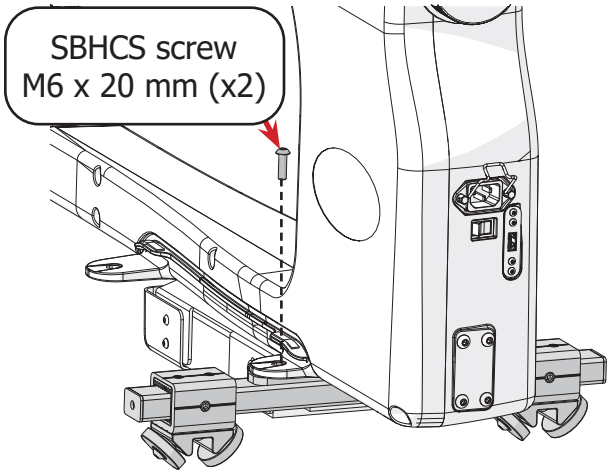
Instructions

To install the machine wheels and adjust them to fit your bottom carriage:

1. Place the **back wheel support assembly** under the rear of the machine with the **set screws** facing the rear.

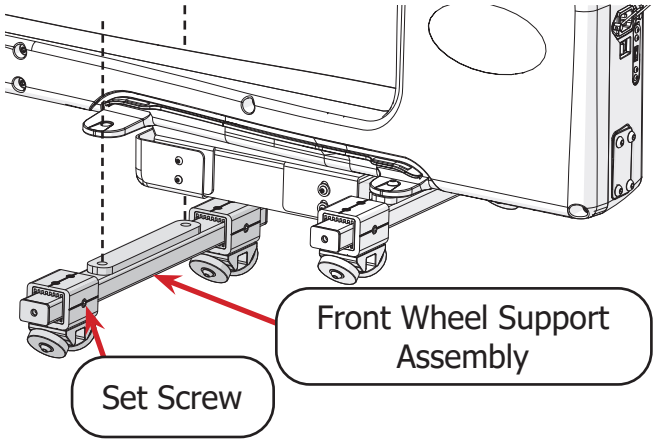


2. Use two **M6 x 20 mm SBHCS screws** and the 4 mm Allen wrench to secure the wheel support assembly.

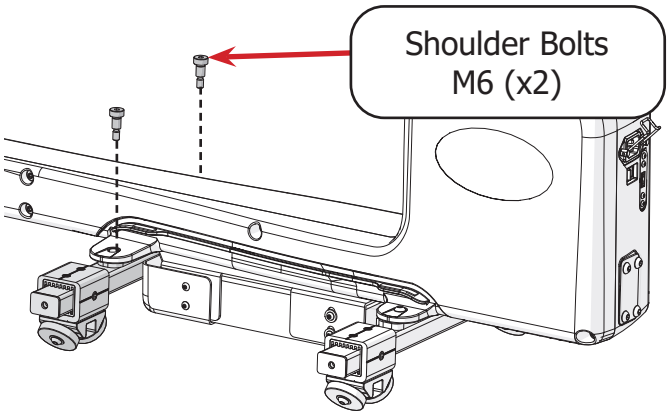


Installing the Wheels (Continued)

3 Place the **front wheel support assembly** under the front of the machine, with the **set screws** facing the rear.

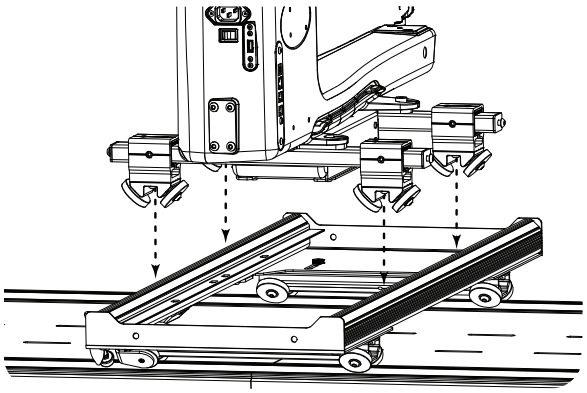


4 Use two **M6 shoulder bolts** and the 4 mm Allen wrench to screw the wheel support to the machine.

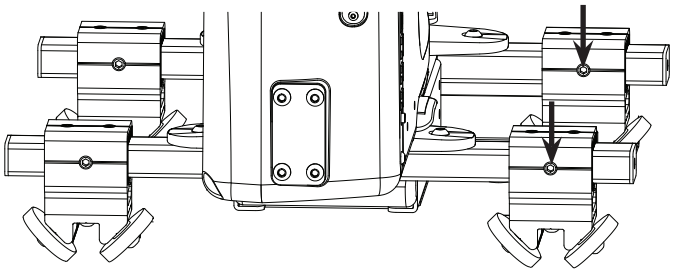


5 Place the machine onto the bottom carriage so that the tracks align with the wheels.

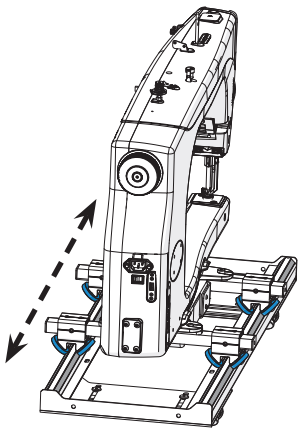
Tip: See your frame manual for bottom carriage orientation.



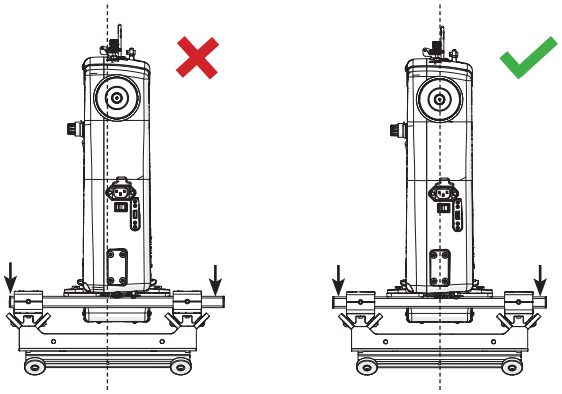
6 Loosen two set screws on one side of the machine (either the right side or left side) with the 4 mm Allen wrench.



7 Slide the machine up and down the bottom carriage tracks. The machine should move smoothly.

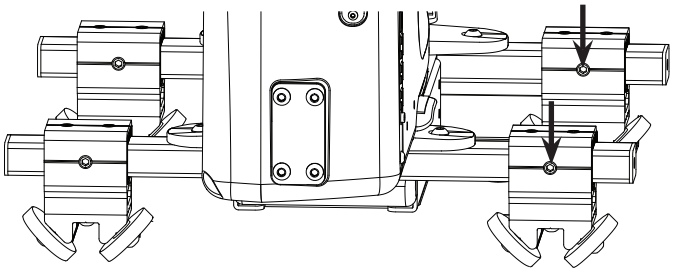


8 Check that the machine is centered over the wheels. If needed, loosen all four wheel block set screws and shift the machine from side to side.



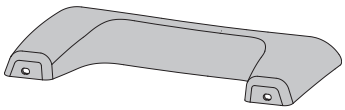
Installing the Wheels (Continued)

9 Re-tighten the wheel block set screws that you loosened using the 4 mm Allen wrench.

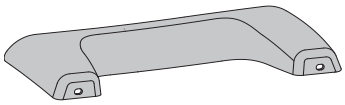


Installing the Wheel Covers

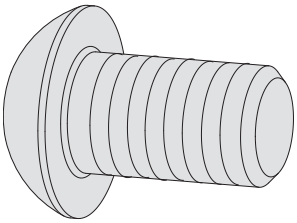
Parts & Tools Needed:



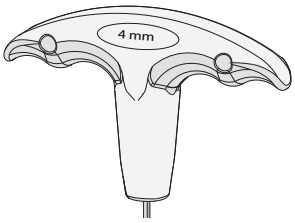
Plastic Base - Left



Plastic Base - Right



SBHCS Screw
M6 x 16 mm (x4)

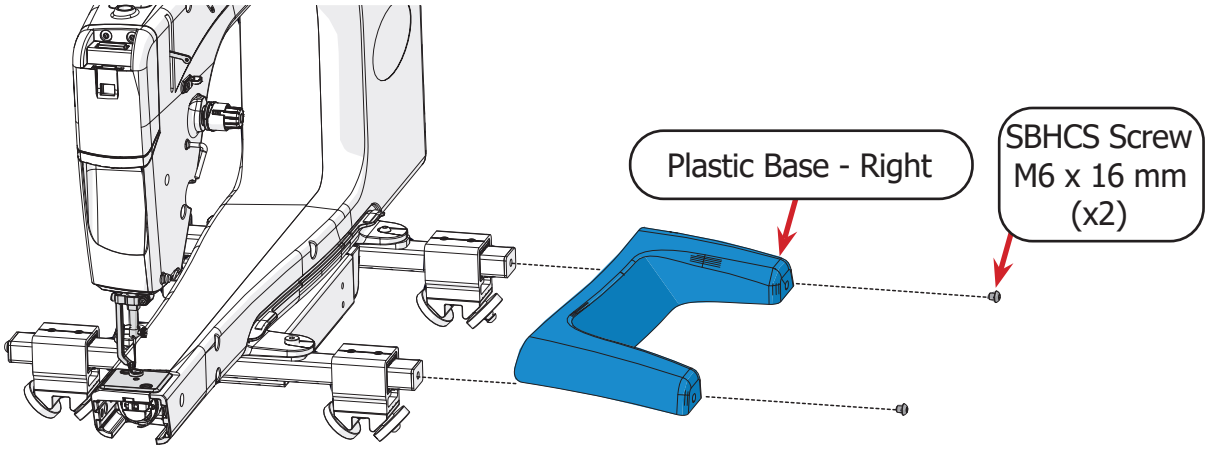


T-handle Allen
Wrench 4 mm

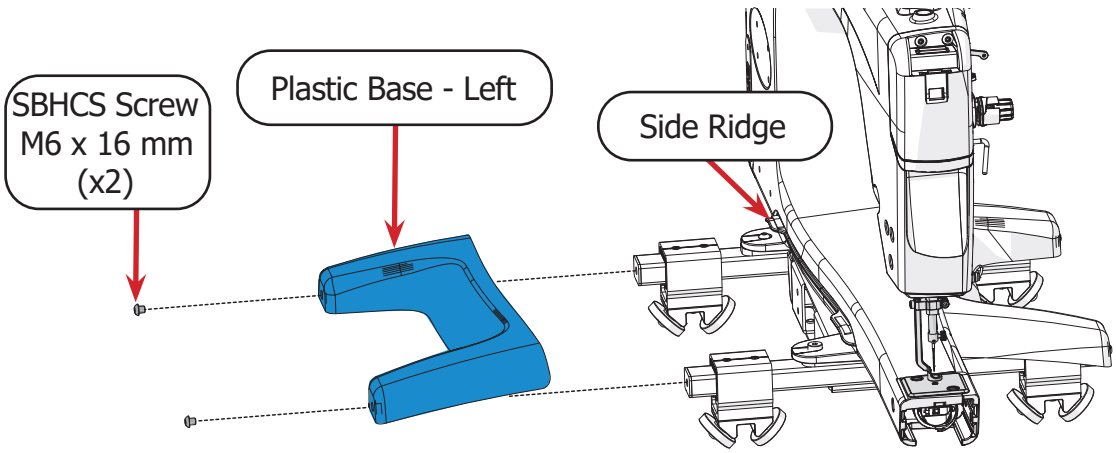
Instructions

Take the following steps to install the wheel covers onto the machine:

1. Slide the **right plastic base** onto the right side of the machine, over the **side ridge**. Screw in place with two **M6 x 16 mm SBHCS screws** and the 4 mm Allen wrench. Tighten until snug.

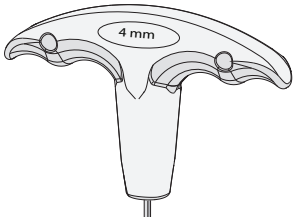


2. Slide the **left plastic base** onto the left side of the machine. Screw two **M6 x 16 mm SBHCS** screws into the plastic base using the 4 mm Allen wrench. Tighten until snug.

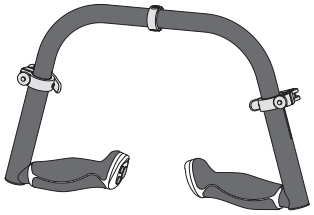


Assembling the Handlebars

Parts & Tools Needed:



T-handle Allen Wrench 4 mm

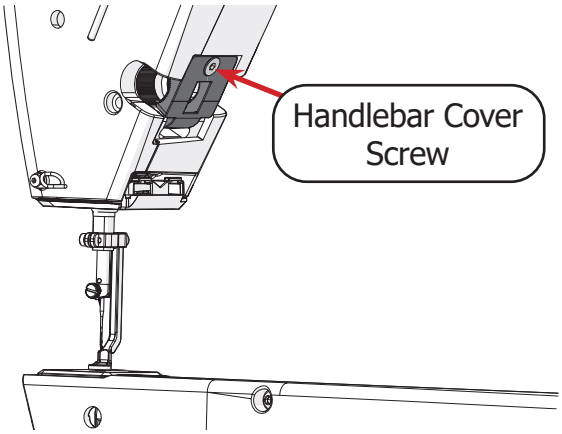


Handlebar Assembly

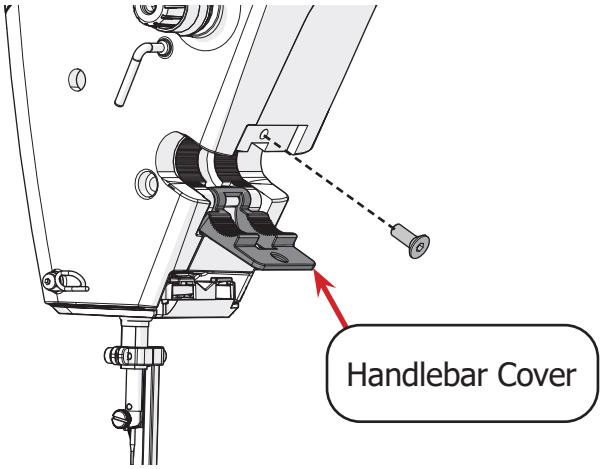
Instructions

Take the following steps to install the machine handlebars:

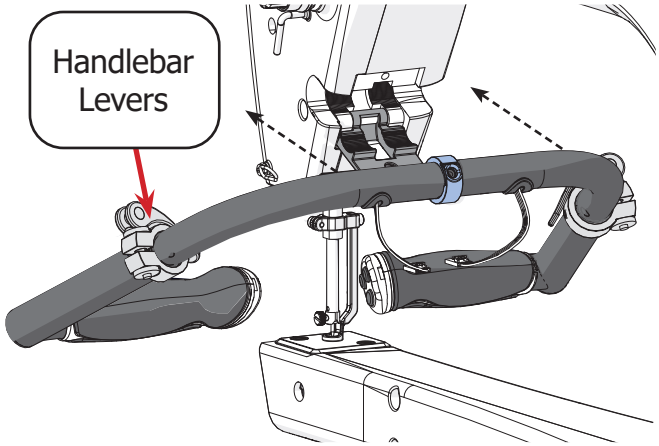
1. With the 4 mm Allen wrench, remove the **handlebar cover screw**.



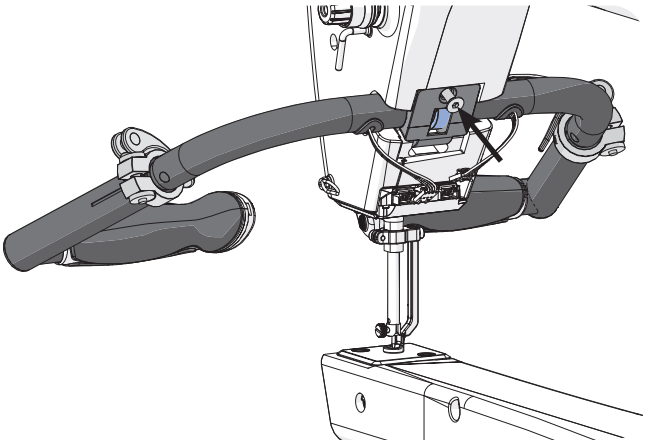
The **handlebar cover** opens.



2. Slide the handlebars into the slot so the **handlebar levers** are face up.

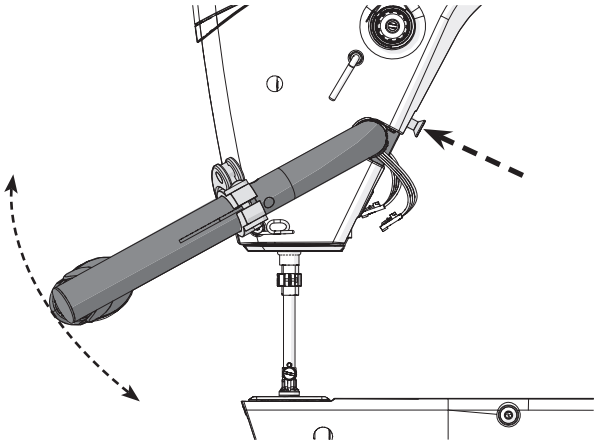


3. Close the cover and loosely screw in the cover screw.

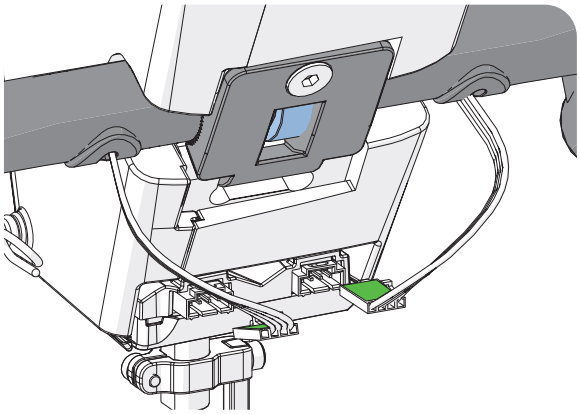


Assembling the Handlebars (Continued)

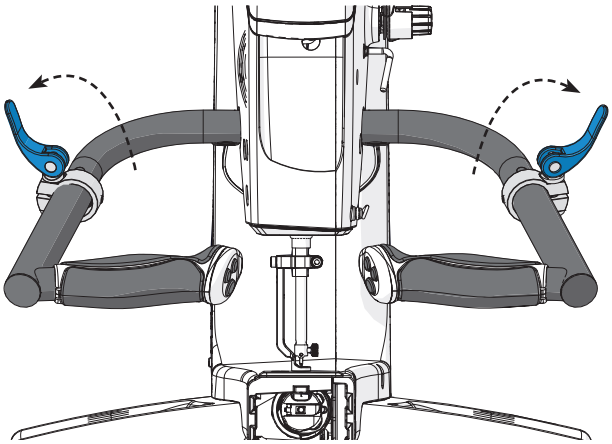
4 Hold the handlebars at the desired angle and tighten the cover screw.



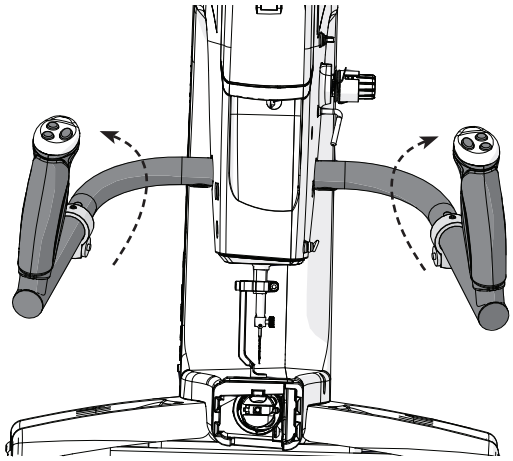
5 Plug the cables from the handlebars into the machine so the **green stickers** face up.



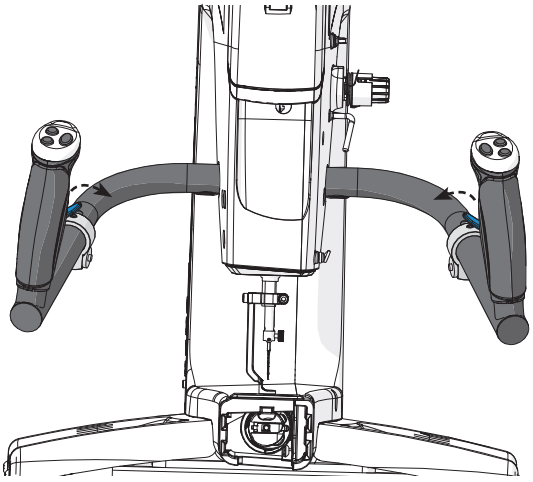
6 Open the **handlebar levers** (shown in blue).



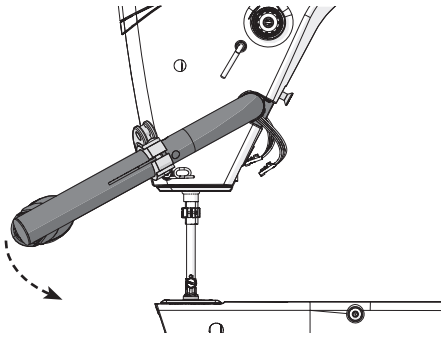
7 Twist the controls until they are comfortable to hold and operate.



8 Close the handlebar levers.

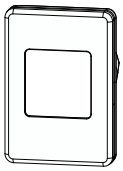


Tip: For micro-stippling, angle the handlebars down toward the needle plate in step 4, and leave the controls horizontal in step 7.



Connecting the Display

Parts & Tools Needed:

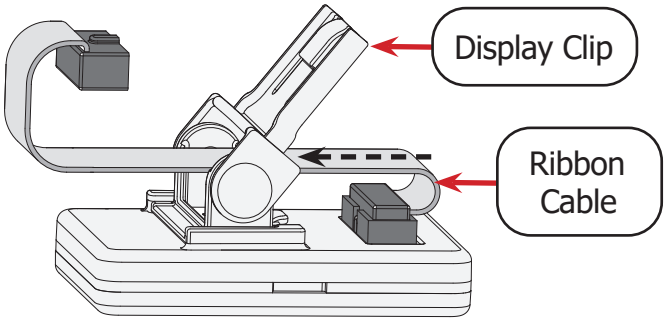


OLED Display
with Cables

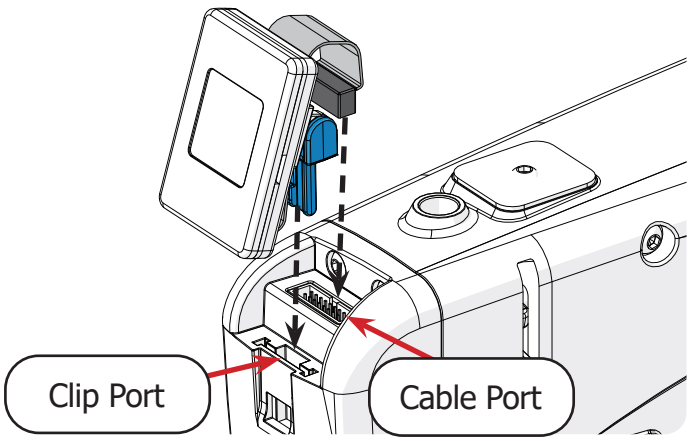
Instructions

Take the following steps to install the display.

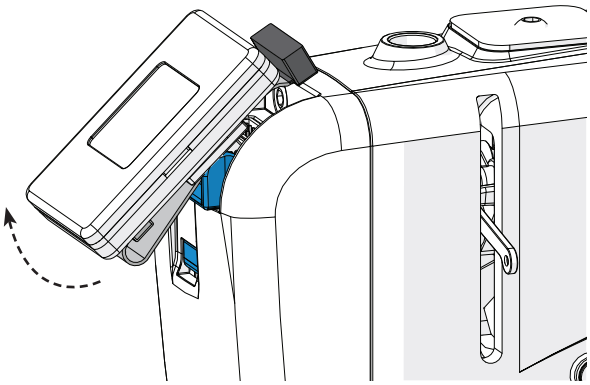
1. If not already done, plug one end of the **ribbon cable** into the display. Weave the cable through the **display clip**.



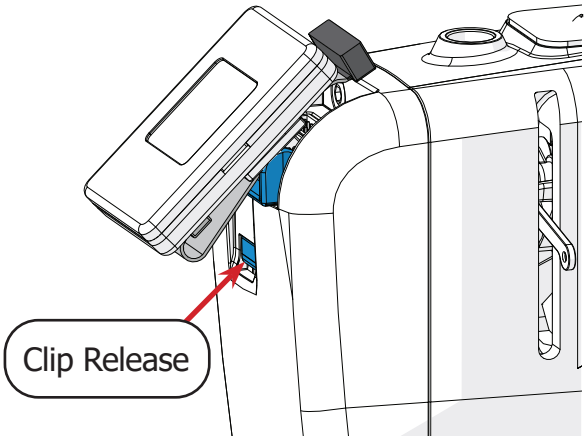
2. Slide the display clip into the **clip port** and ribbon cable into the **cable port**.



Note: To remove the display, power off the machine. Unplug the display ribbon cable and lift the bottom of the display up.

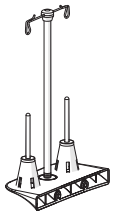


Press in on the **clip release**.

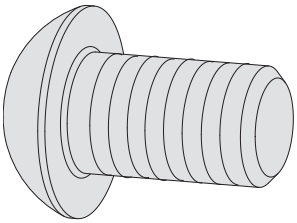


Attaching the Thread Stand

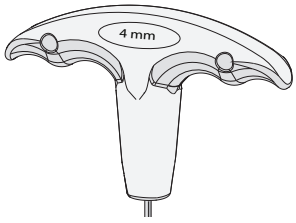
Parts & Tools Needed:



Thread Stand Assembly



SBHCS Screw M6 x 16 mm (x2)

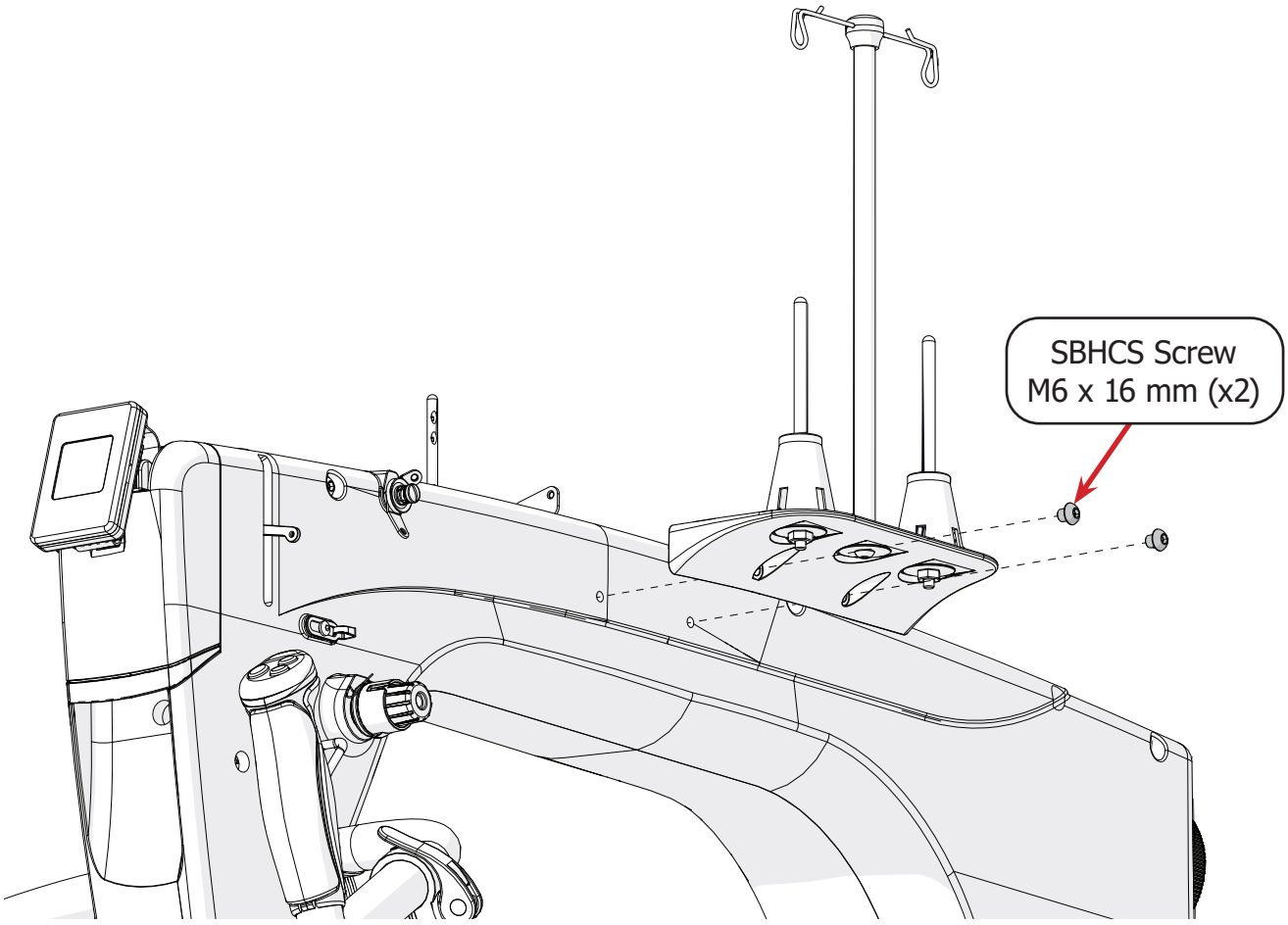


T-handle Allen Wrench 4 mm

Instructions

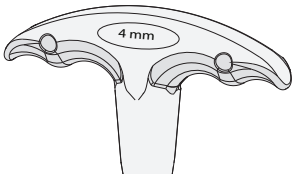
To install the thread stand assembly:

- Use two **M6 x 16 mm SBHCS screws** to install the thread stand assembly on the right side of the machine.

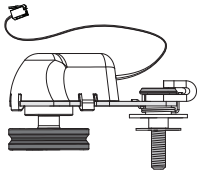


Installing the Upper Encoder

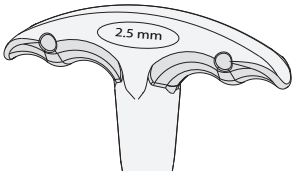
Parts & Tools Needed:



T-handle Allen Wrench 4 mm



Upper Encoder (silver spring)

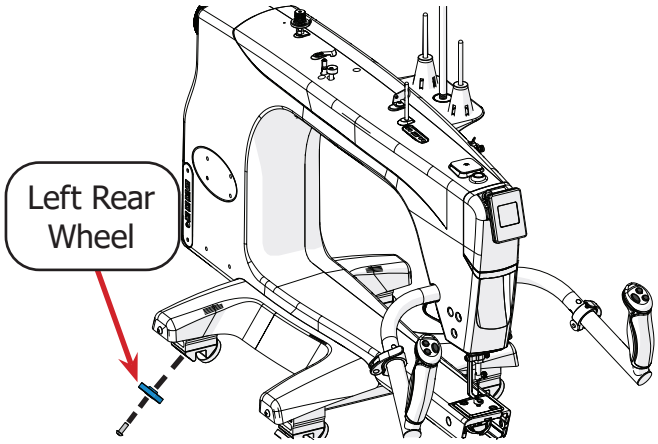


T-handle Allen Wrench 2.5 mm

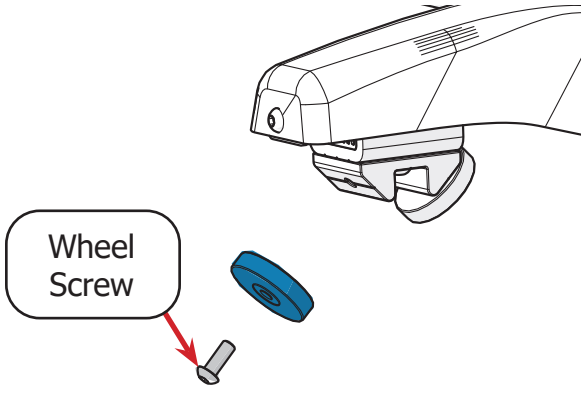
Instructions

The encoders monitor the movemet of the machine over the frame, allowing for regulated stitching. The upper encoder is installed on the outward-facing, left-rear wheel of the machine. Please take the following steps to install the upper encoder:

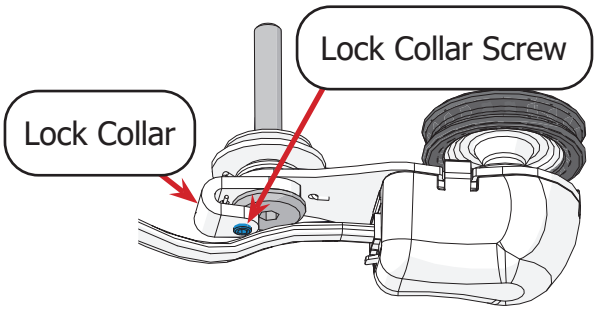
1. Use the 4 mm T-handle Allen wrench to remove the **left rear wheel** from the machine.



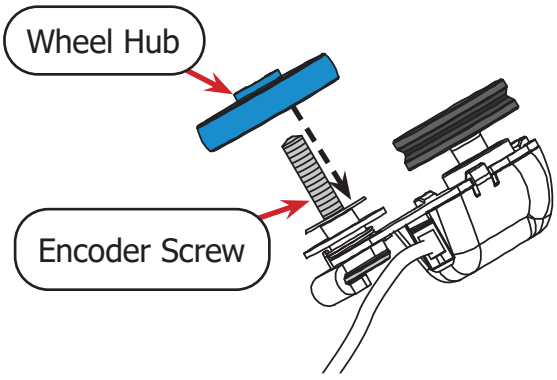
The **wheel screw** will not be needed again and can be stored with the packaging materials.



2. Loosen the **lock collar screw** on the upper encoder with the 2.5 mm Allen wrench until the **lock collar** turns freely.

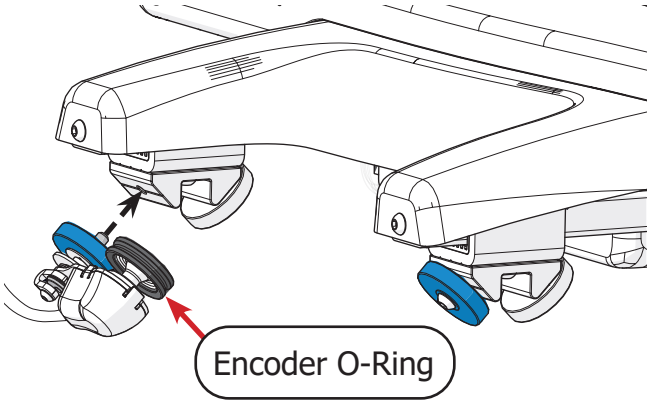


3. Slide the wheel onto the upper **encoder's screw** so that the **wheel hub** faces away from the encoder.

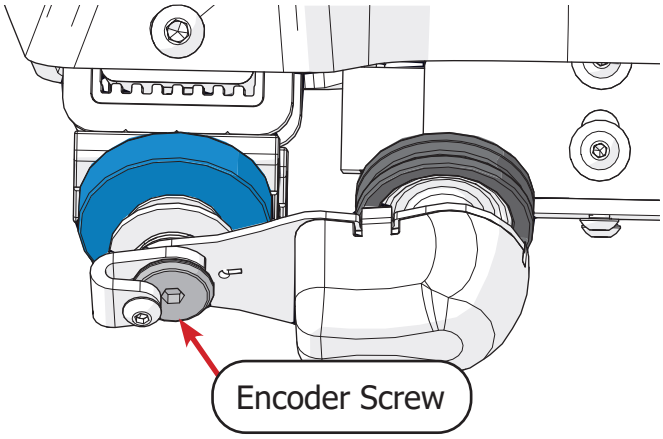


Installing the Upper Encoder (Continued)

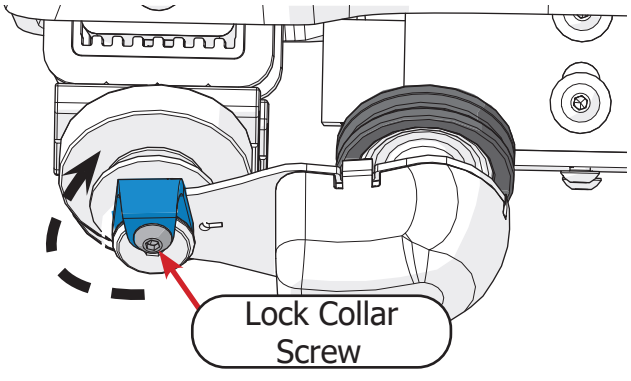
4 Place the encoder screw into the left rear wheel hole so the **encoder O-ring** is between the two left machine wheels.



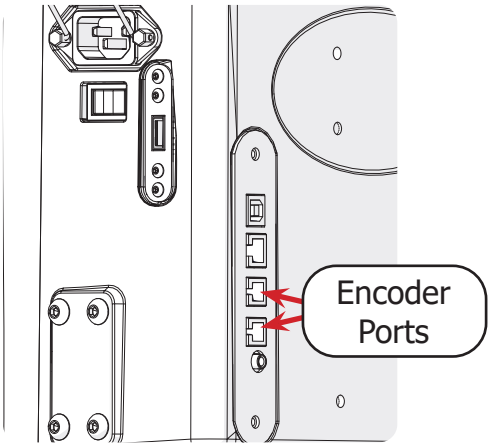
5 Tighten the **encoder screw** with the 4 mm Allen wrench.



6 Turn the **encoder lock collar** (shown in blue) to point up and tighten the **lock collar screw** with the 2.5 mm Allen wrench.

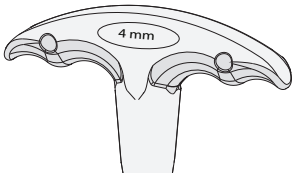


7 Plug the encoder cable into one of the **encoder ports** on the back left of the machine.

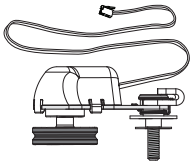


Installing the Lower Encoder

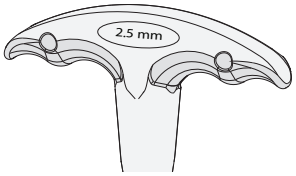
Parts & Tools Needed:



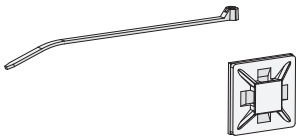
T-handle Allen Wrench 4 mm



Lower Encoder (black spring)



T-handle Allen Wrench 2.5 mm

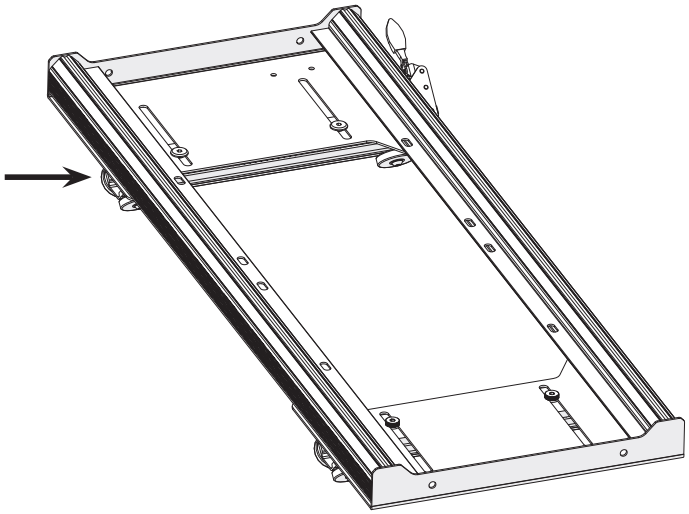


Zip Tie (2)
Zip Tie Mount (2)

Instructions

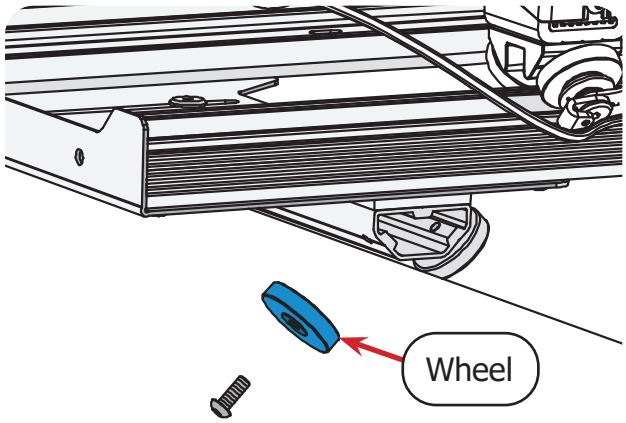
The encoders monitor the movement of the machine over the frame, allowing for regulated stitching. The lower encoder is installed on the left-rear wheel of the bottom carriage. Please take the following steps to install the encoder onto the bottom carriage:

1. Locate the left rear wheel of your bottom carriage.

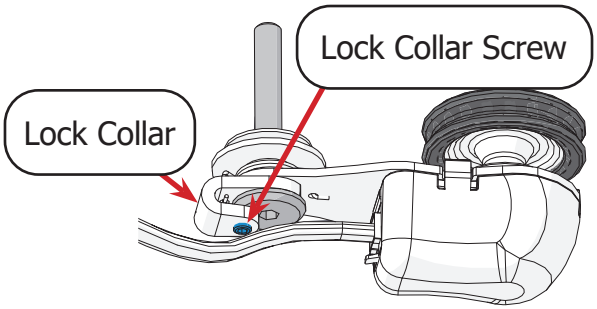


Note: If needed, review your frame assembly manual to determine the front of the bottom carriage.

2. Use the 4 mm Allen wrench to remove the outward-facing, left rear **wheel** from the bottom carriage.

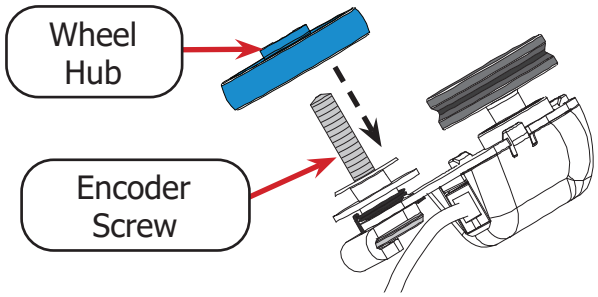


3. Loosen the **lock collar screw** on the lower encoder with the 2.5 mm Allen wrench until the **lock collar** turns freely.

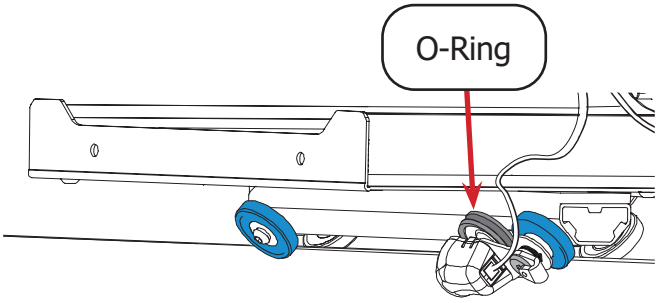


Installing the Lower Encoder (Continued)

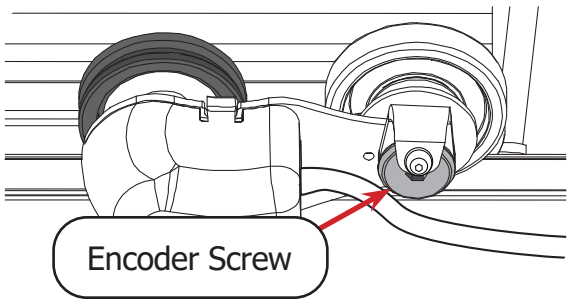
4 Slide the wheel onto the **encoder screw** with the **wheel hub** facing away from the encoder.



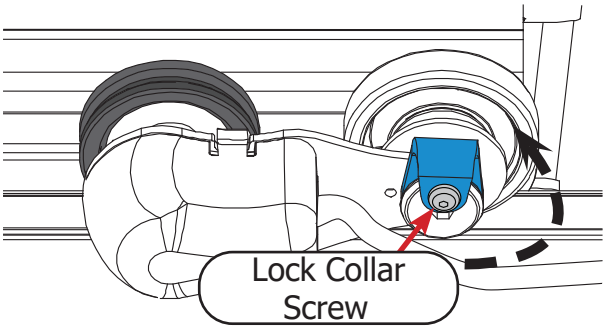
5 Place the encoder screw into the left rear wheel hole on the carriage so the **O-ring** is between the rear wheels.



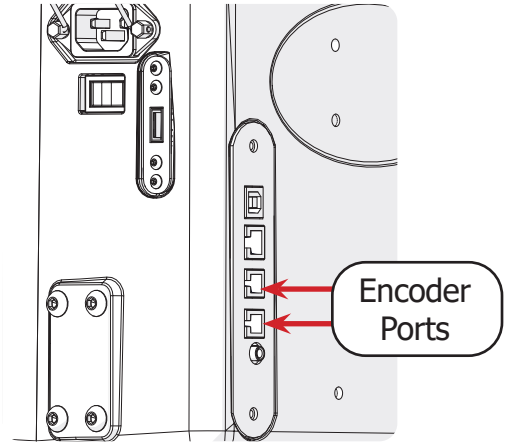
6 Tighten the **encoder screw** with the 4 mm Allen wrench.



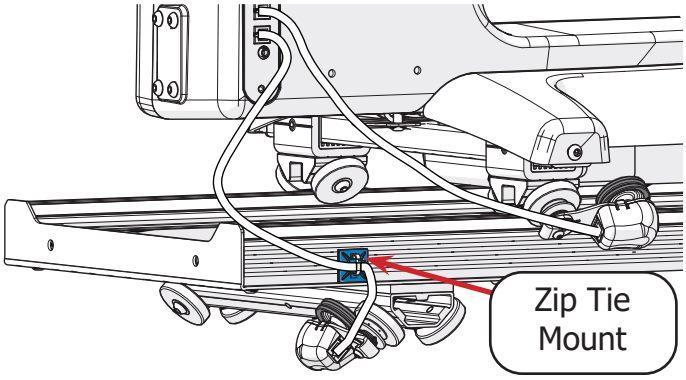
7 Turn the encoder **lock collar** (shown in blue) to point up. Then tighten the **lock collar screw** with the 2.5 mm Allen wrench.



8 Plug the encoder cable into one of the **encoder ports** on the left rear of the machine.

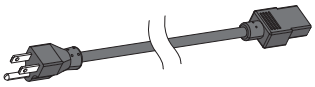


9 To prevent the long encoder cable from catching the carriage, use the adhesive **zip tie mount** and zip tie to fasten the cable to the side of the bottom carriage.



Turning the Machine On/Off

Parts & Tools Needed:

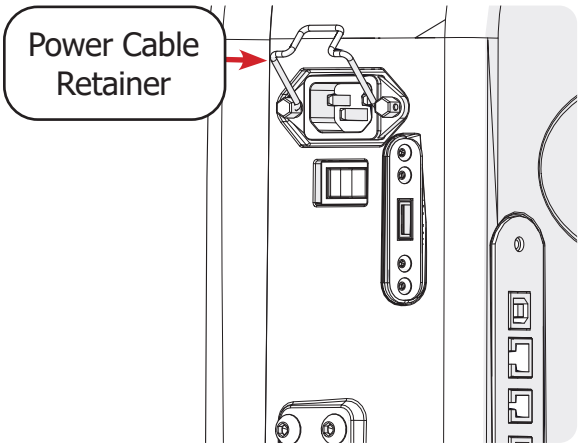


Power Cord

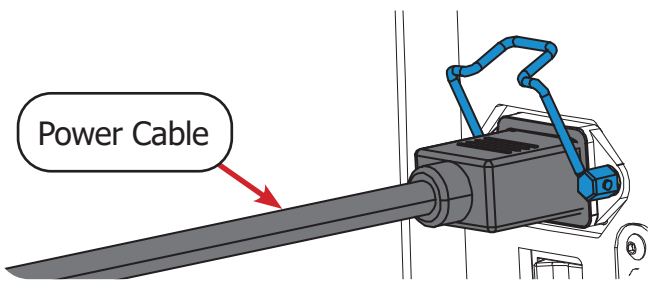
Instructions

The power cable port and power switch are located on the back of the machine. To power on the machine, take the following steps:

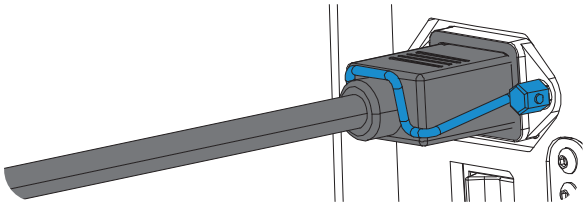
1. Lift up the **power cable retainer**.



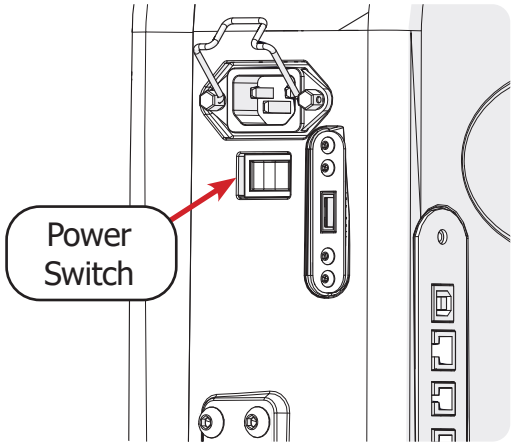
2. Plug the **power cable** into the machine.



3. Press the power cable retainer down firmly until it grasps the power cable.



4. Press the right side of the **power switch** to turn the machine on.



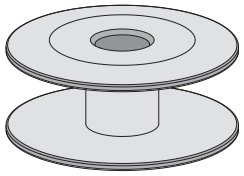
Preparing to Quilt

This section of the manual covers choosing the settings for your machine, winding the bobbin, loading the bobbin case, and threading the machine.

Winding a Bobbin

For information on adjusting the bobbin fill levels, see page 56.

Parts & Tools Needed:



Bobbin (Class M)

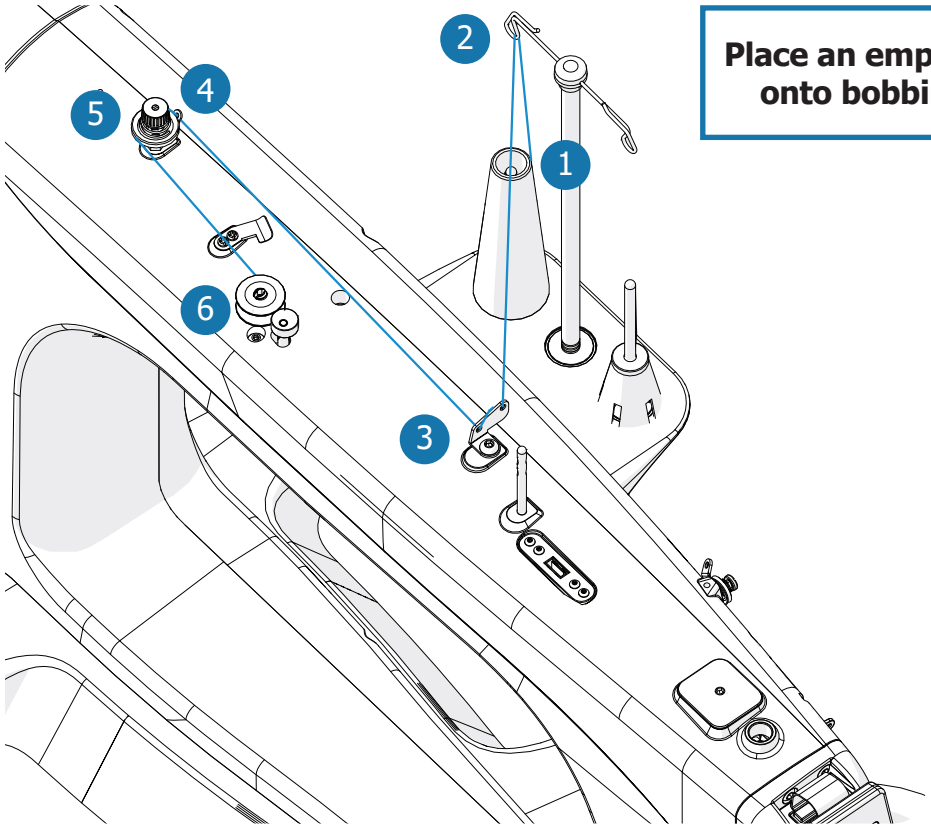
Instructions

Your machine comes with two bobbins pre-wound with 50 weight cotton thread. An empty M-class bobbin has also been provided. It's important to choose bobbin thread that is similar in type and quality as the top thread. For more information on choosing thread, see "Choosing Your Thread" on page 82.

Note: This machine uses cone-style thread. Unless you have the spool accessory, please use only thread cones for this machine.

The following diagram outlines the path (shown in blue) the thread must take to wind the bobbin.

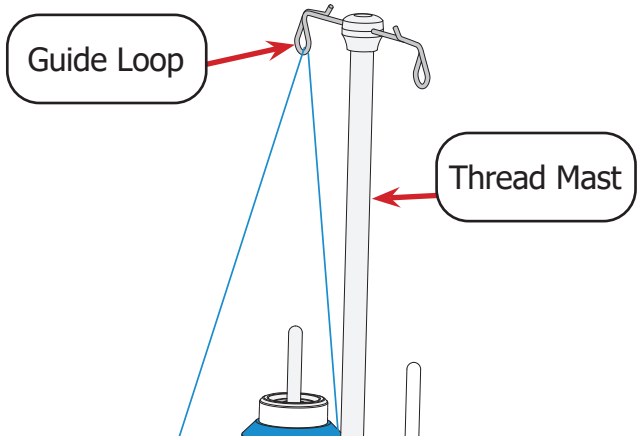
Place an empty bobbin onto bobbin stand



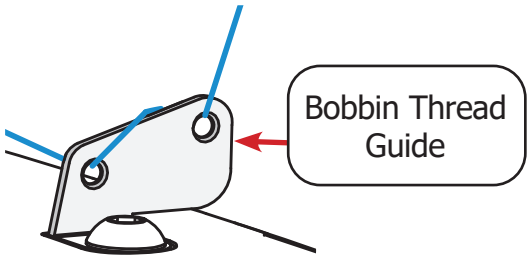
1. Thread Stand
2. Guide Loops
3. Bobbin Thread Guide
4. Spring Hook
5. Bobbin Thread Tensioner
6. Bobbin Stand with Bobbin

Winding a Bobbin (Continued)

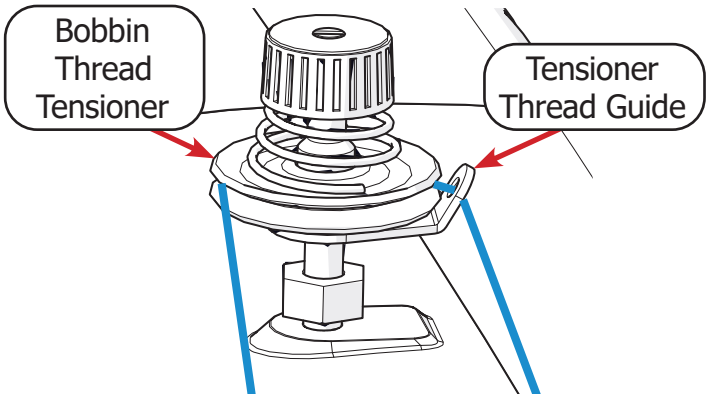
1 Run the thread through the **thread mast guide loop** directly above the thread cone.



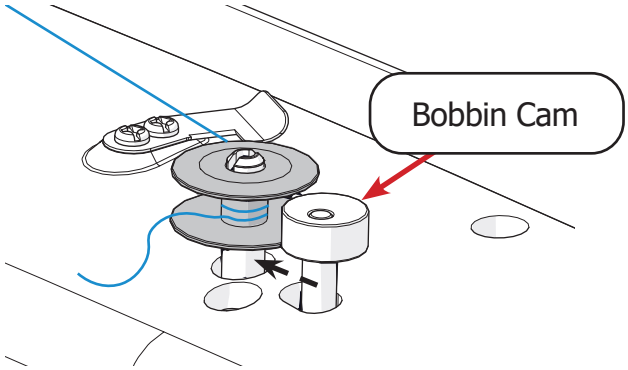
2 Feed the thread through the front of the first hole (closest to the thread cone) on the **bobbin thread guide**. Then wrap it back over and pass through the front of the second hole.



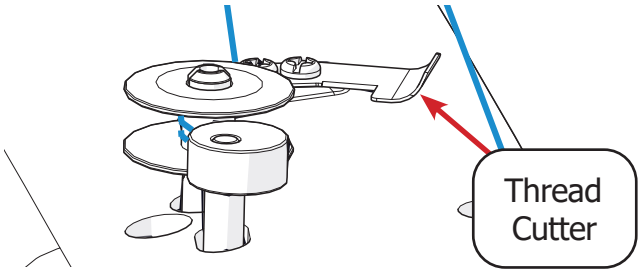
3 Pull the thread through the hole in the **tensioner thread guide** and then around the back of the **bobbin thread tensioner**, between the two discs.



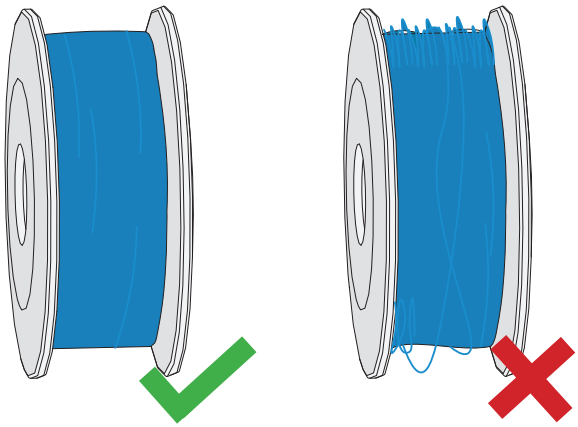
4 Tightly wrap the thread clockwise around the bobbin a few times to hold the thread in place. Push the **bobbin cam** toward the bobbin to start winding.



5 Winding stops automatically when the bobbin is full. Cut the thread with the **thread cutter** near the bobbin cam.



The bobbin thread should appear neat and smooth.

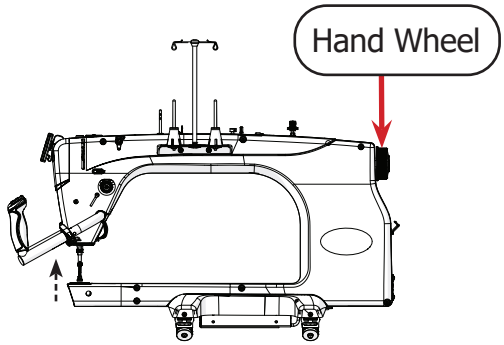


Note: Bobbin fill levels can be adjusted (see page 56).

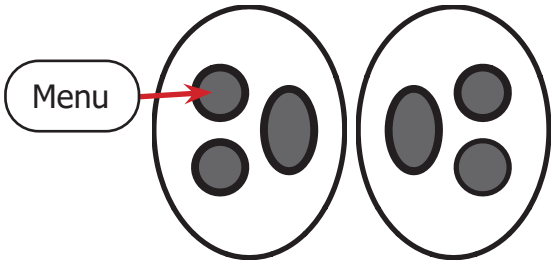
Loading the Bobbin Case

Take the following steps to insert the wound bobbin into the bobbin case and place it in the machine:

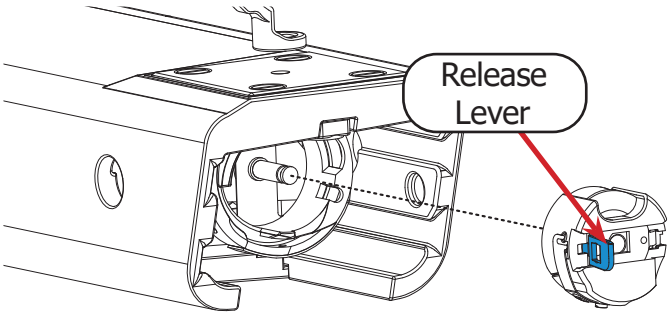
1. Check that the needle is up. If needed, rotate the **hand wheel** to raise the needle.



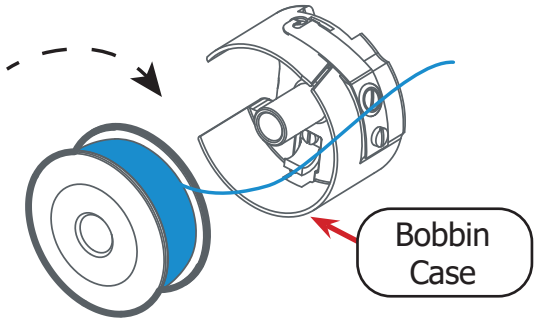
2. Press the Menu button on the handlebar controls to go to the Main Menu and deactivate stitching.



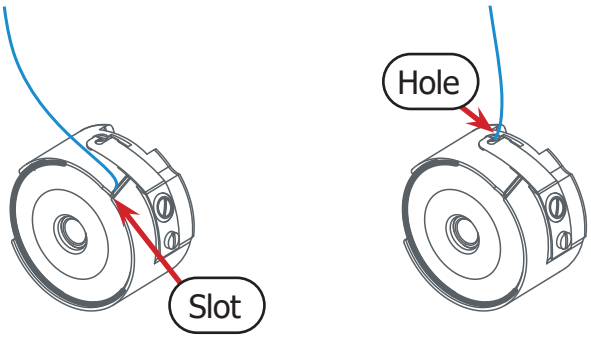
3. Pull on the bobbin case **release lever** to remove the bobbin case from the hook assembly.



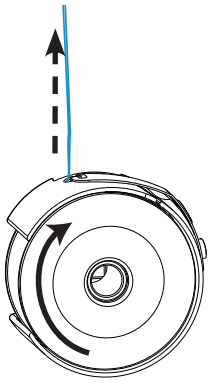
4. Place the wound bobbin into the **bobbin case**. Note the direction that the thread is coming off the bobbin in relation to the case.



5. Slip a few inches of thread through the **slot** and out of the **hole**.



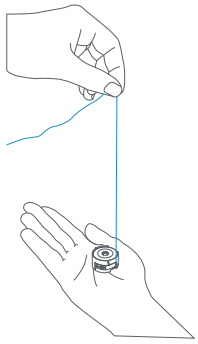
Note: If the bobbin is installed correctly in the case, the bobbin will turn clockwise when the thread is pulled.



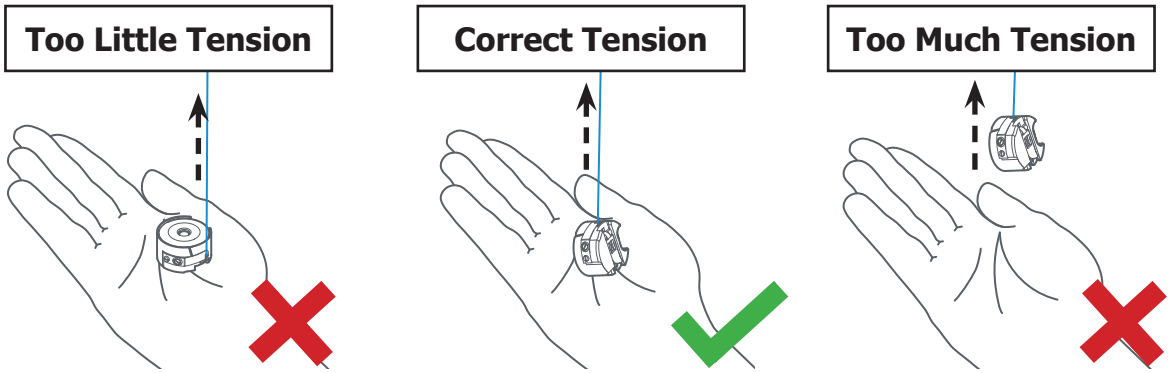
Loading the Bobbin Case (Continued)

6 Test the tension of the bobbin case every time the bobbin thread is changed; bobbin tension is the foundation for correct thread tension.

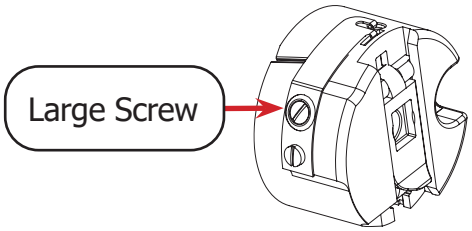
a. Place the bobbin case on its side, on your palm.



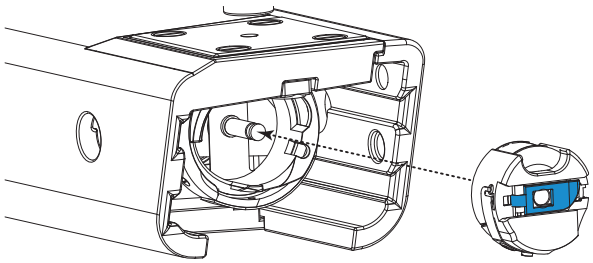
b. Pull up on the thread. The thread should run freely and the bobbin case should rise into a vertical position without lifting off your hand.



- If the case remains on its side, there is too little tension. Turn the **large screw** clockwise.
- If the case lifts into the air, there is too much tension. Turn the **large screw** counter-clockwise.



7 Place the bobbin case inside the machine with the **lever** (shown in blue) at the 3 o'clock position. It should click into place. Do not pull on the lever while inserting the bobbin case.



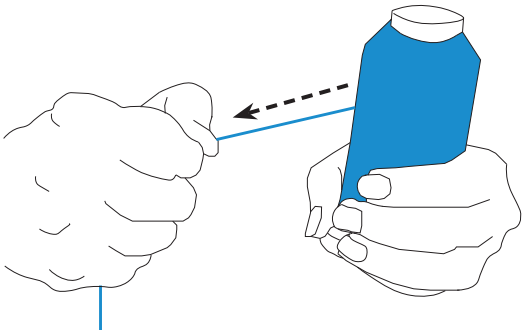
Threading the Machine

Before threading the machine, make sure you've selected quality thread for your project. Choosing the right thread for the machine can prevent the thread from breaking or tangling up under the needle plate. For more information on choosing thread, see page 82. Note the following:

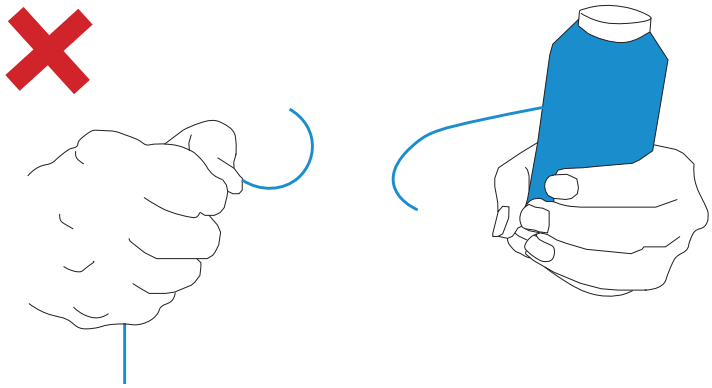
- This machine uses cone-style thread, not thread from a spool. Do not use spool thread unless the spool accessory has been installed.

- Choose thread that is strong enough to pass the yank test, and re-test thread as it ages. Thread strength can diminish over time.

a. Hold the cone in one hand and the end of the thread in the other.



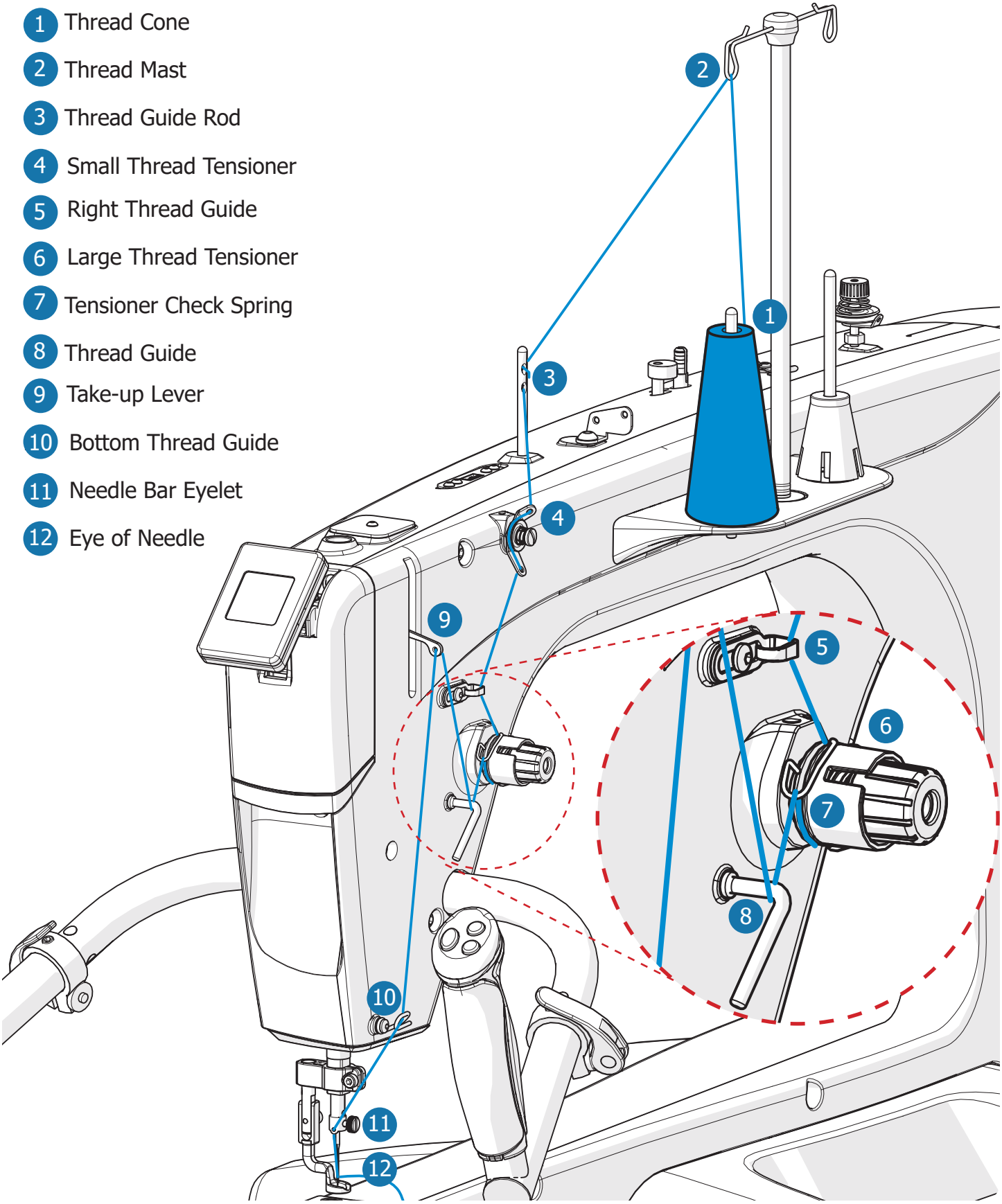
b. Tug on the thread. If the thread snaps easily, it may be too brittle to use for quilting.



Threading the Machine (Continued)

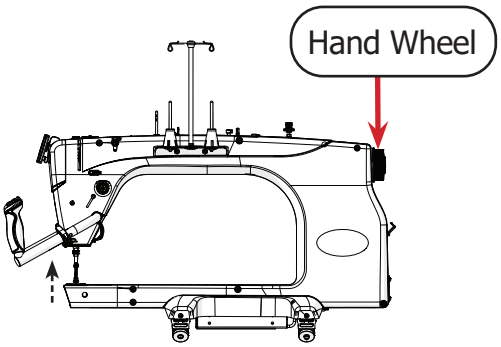
The following diagram outlines the path (shown in blue) the thread must take through the machine.

1. Thread Cone
2. Thread Mast
3. Thread Guide Rod
4. Small Thread Tensioner
5. Right Thread Guide
6. Large Thread Tensioner
7. Tensioner Check Spring
8. Thread Guide
9. Take-up Lever
10. Bottom Thread Guide
11. Needle Bar Eyelet
12. Eye of Needle

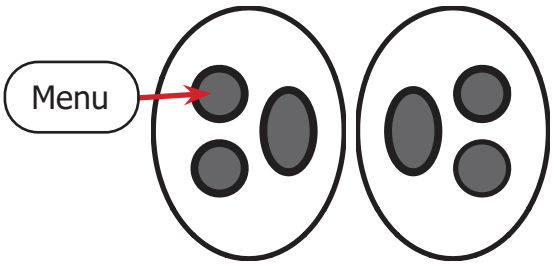


Threading the Machine (Continued)

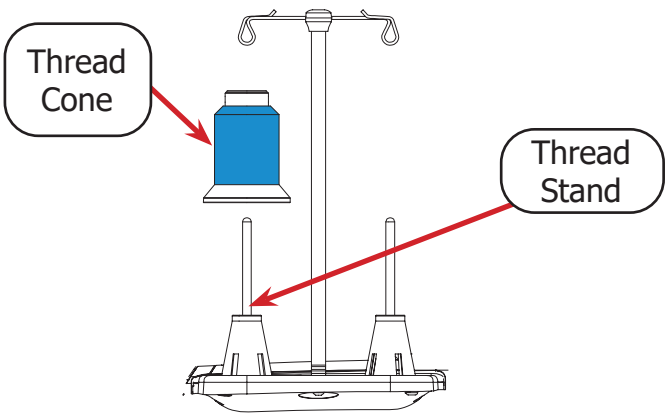
1. Rotate the **hand wheel** at the rear of the machine to raise the needle to the top position.



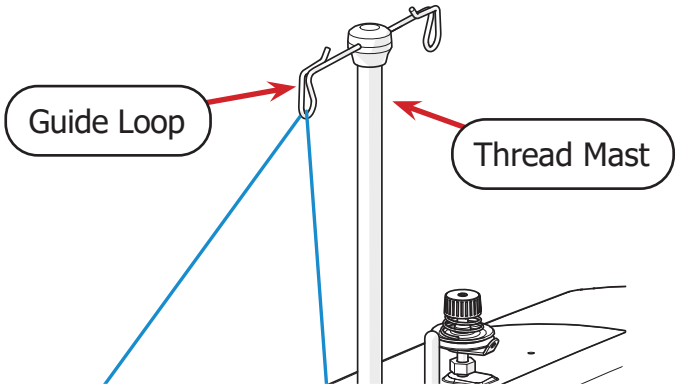
2. To prevent accidental stitching or needle movement, press the **Menu** button on the handlebar controls.



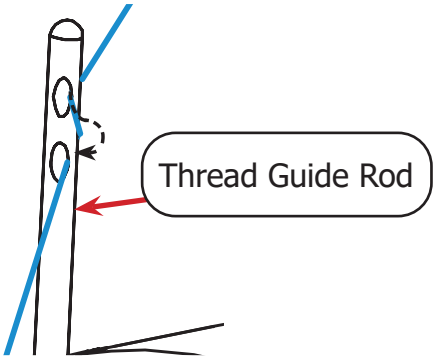
3. Place the **thread cone** on the cone-style **thread stand** toward the front.



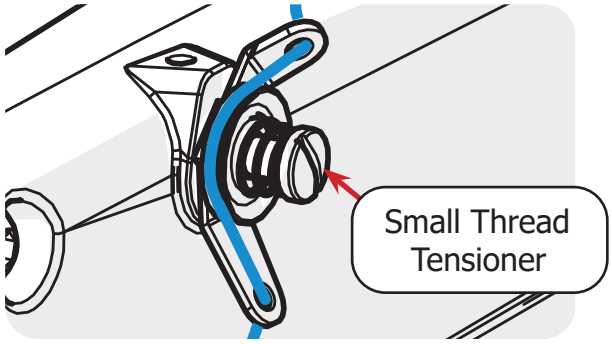
4. Pull the thread straight up, through the **thread mast guide loop** above the thread stand.



5. Feed the thread through the top hole of the **thread guide rod**. Wrap the thread around to the back of the guide and insert through the bottom hole.

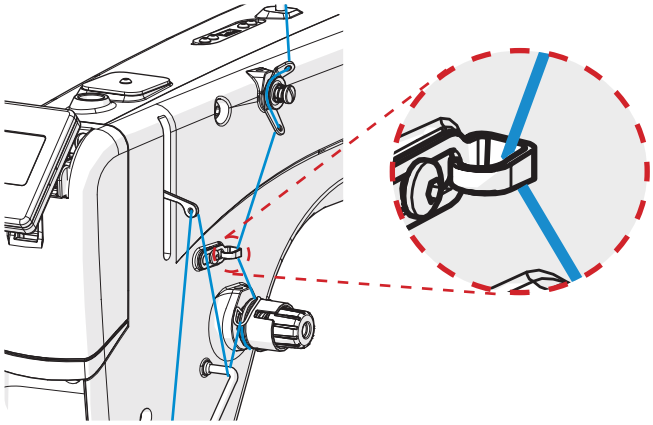


6. Run the thread through the top hole on the **small thread tensioner**. Then slip the thread between the two discs, and through the bottom hole of the small thread tensioner.

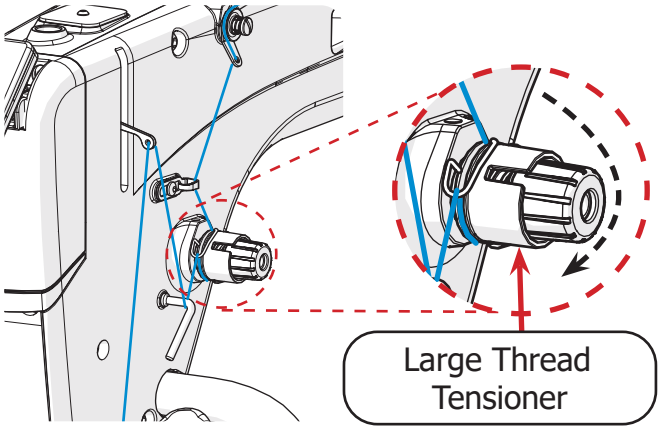


Threading the Machine (Continued)

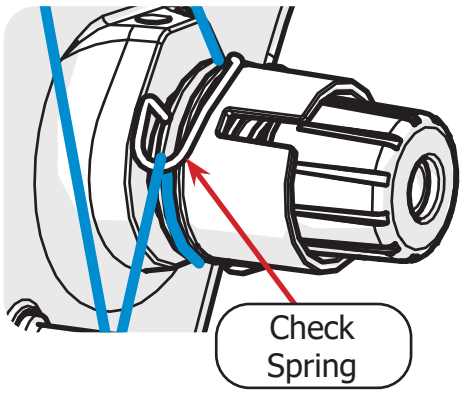
7 Feed the thread through the thread guide above the large thread tensioner.



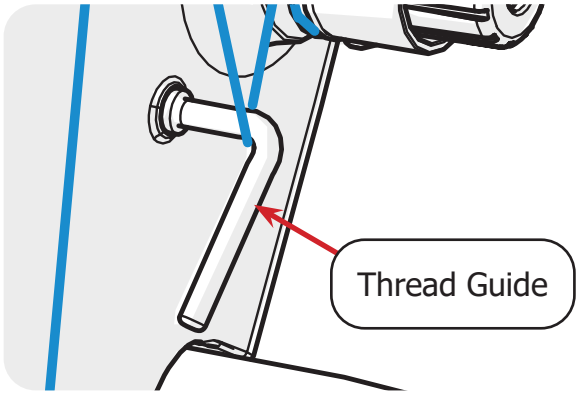
8 Pull the thread around the **large thread tensioner,** between the tension discs.



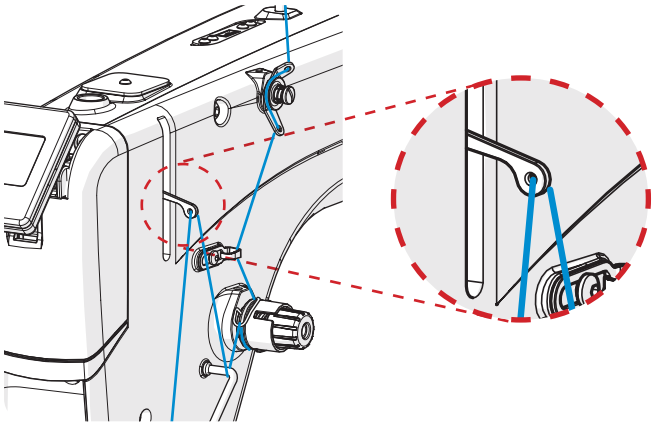
9 Wrap the thread over the **check spring**.



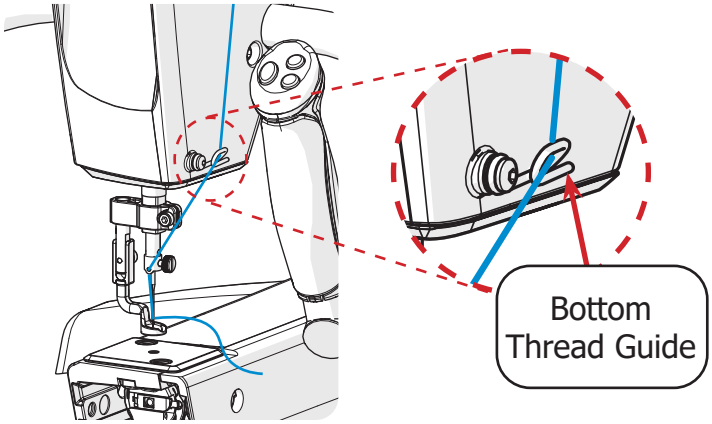
10 Next, pass the thread down and around the **thread guide** next to the large thread tensioner.



11 Pull the thread through the hole in the **take-up lever**.

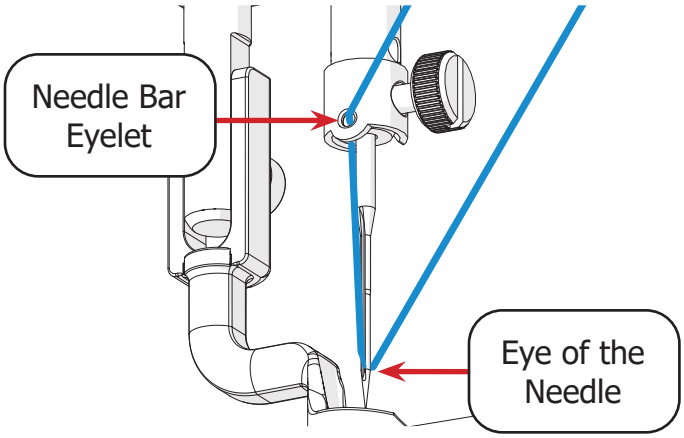


12 Then pass the thread down through the **bottom thread guide** on the way to the needle.



Threading the Machine (Continued)

13 Now pass the thread through the front of the **needle bar eyelet**, located above the needle. Thread the **eye of the needle** from front to back.



Final Checklist

Before you begin quilting, make sure that:

- The bobbin is wound and installed in the machine.
- The needle is straight, and held firmly to the needle bar.
- The power cord is connected to the machine and power outlet.
- The quilting area is clear of any materials that are not needed for quilting.

Quilting

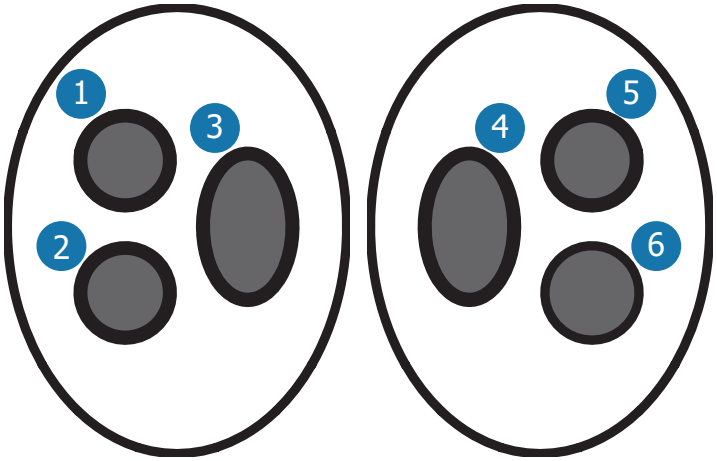
Now that the machine is set up, it's time to start quilting! This section of the manual describes handlebar control, using the four quilting modes, and tensioning the thread.

Tip: While familiarizing yourself with the controls and display of your quilting machine, it's a good time to test out new quilting materials and practice stitching. Test your thread tension while using the different quilting modes available on the machine.

Using the Handlebar Controls

When first powered up, the machine is in precise regulated quilting mode and can start quilting right away. Please take a moment to review the handlebar controls. These controls are used for quilting and navigating the menus on the display.

Note: Left-handed quilters may prefer to reverse these buttons. This can be done in the Preferences menu (see page 48).



1. **Menu:** Press to go to the Main Menu screen. The Main Menu provides access to the other quilting modes and the Tools menu.

2. **Back:** This button goes back to the previous menu.

3. **Needle Up / Needle Down:**
   - Press and release to cycle the needle to the up or the down position.
   - Press and hold for three seconds to change the default needle stop position. Powering off the machine will clear the changes made to this setting and the needle will default to the up position once the machine is turned back on.

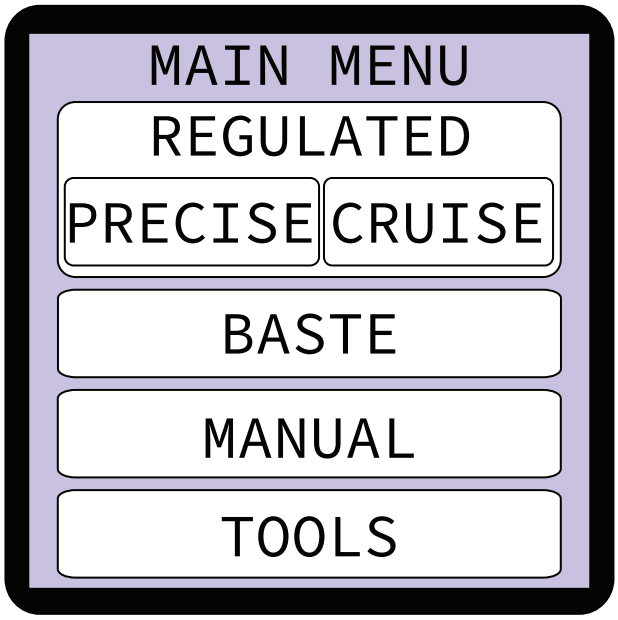
4. **Start/Stop Quilting** or **Select:** When pressed in regulated quilting mode, baste quilting mode, or manual quilting mode, the machine will begin or stop stitching. While in the Main Menu or the Tools menu, this button selects the highlighted option.

5. **Up:** This button scrolls up in a menu. While quilting, it increases the machine speed or stitch length, depending upon the quilting mode.

6. **Down:** This button scrolls down in a menu. In a quilting mode, it will decrease the machine speed or stitch size.

Choosing a Quilting Mode

When first powered up, the machine starts in precise regulated quilting mode. To switch to a different quilting mode, press the menu button on the handlebar to go to the Main Menu.



There are four quilting modes available: precise regulated, cruise regulated, baste, and manual. Each option allows for the use of different quilting techniques.

- **Regulated:** Choose the size of the stitching (stitches per inch) and the quilting machine adjusts the speed of stitching to match the quilter's movements. This keeps the stitches consistent with the selected size. There are two types of regulated quilting: precise, and cruise.

  Precise: In this mode, the machine will stop stitching when it is not being moved.

  Cruise: In this mode, the machine will stitch in place when it is not being moved. Stitch speed never drops below 5%.

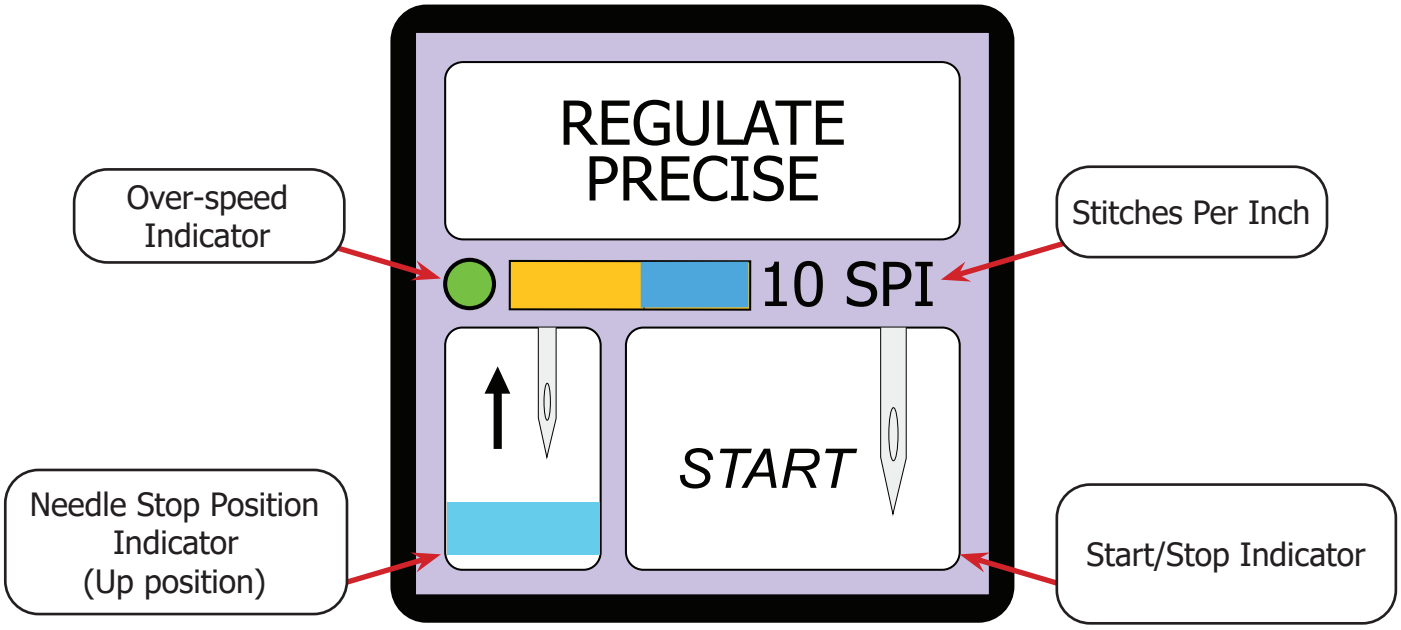
- **Baste:** Create loose, temporary stitches to hold layers of fabric together.

- **Manual:** This quilting mode is the reverse of regulated. Select a speed for the machine to stitch at, and adjust your movements to create shorter or longer stitches. This mode is useful for small, continuous stippling patterns.

Using the Precise Quilting Mode

The machine defaults to the precise quilting mode when turned on. In this regulated quilting mode, the machine maintains the length of the stitch despite the speed and direction of the quilter's movements. If the quilter stops moving, the machine stops stitching.

The precise quilting mode can be accessed by selecting "Precise" from the Main Menu.



1. Confirm that your **Stitches Per Inch (SPI)** is the desired length.
   - Press the up button on the handlebars to decrease the stitch length (increase number of stitches in an inch).
   - Press the down button on the handlebars to increase the stitch length (decrease number of stitches in an inch).

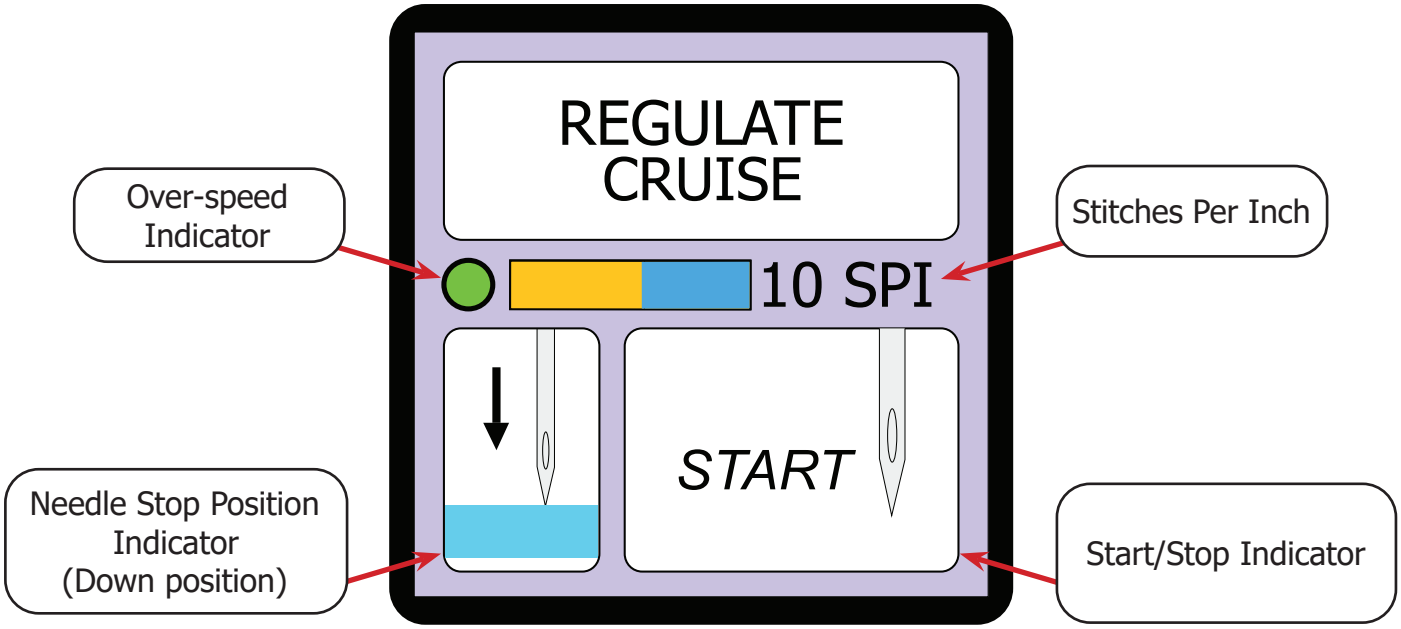
   Tip: This setting can be changed to stitches per centimeter (SPC) in the Preferences menu. See "Choosing Machine Settings" on page 48.
2. Check the **needle stop position indicator** to see if the needle will stop in the up or down position when stitching is inactive. To change the needle stop position, hold down the needle up/down button on the handlebar for three seconds.
3. Position the quilting machine over the quilt where you would like to stitch.
4. Press the start/stop quilting button on the handlebars to begin stitching. Move the machine across the quilt to place the stitches. Moving too quickly for the regulated quilting will cause a beeping alarm to sound and the **over-speed indicator** to turn red. This alarm can be disabled in the Preferences menu (see page 48).

   Note: When quilting, the **Start/Stop indicator** will read *STOP* to let you know that stitching is active and that if you press the start/stop button on the handlebars, stitching will stop. When stitching is not active, the start/stop indicator will show *START*.

Using the Cruise Quilting Mode

In cruise mode, the quilting machine maintains the length of the stitch despite the speed and direction of the quilter's movements. However, the machine will continue to stitch in place (at the minimum speed) if the quilter stops moving the machine.

The cruise quilting mode can be accessed by selecting "Cruise" from the Main Menu.



1. Check that your **Stitches Per Inch (SPI)** is the desired length.
   - Press the up button on the handlebars to decrease the stitch length (increase number of stitches in an inch) .
   - Press the down button on the handlebars to increase the stitch length (decrease number of stitches in an inch).

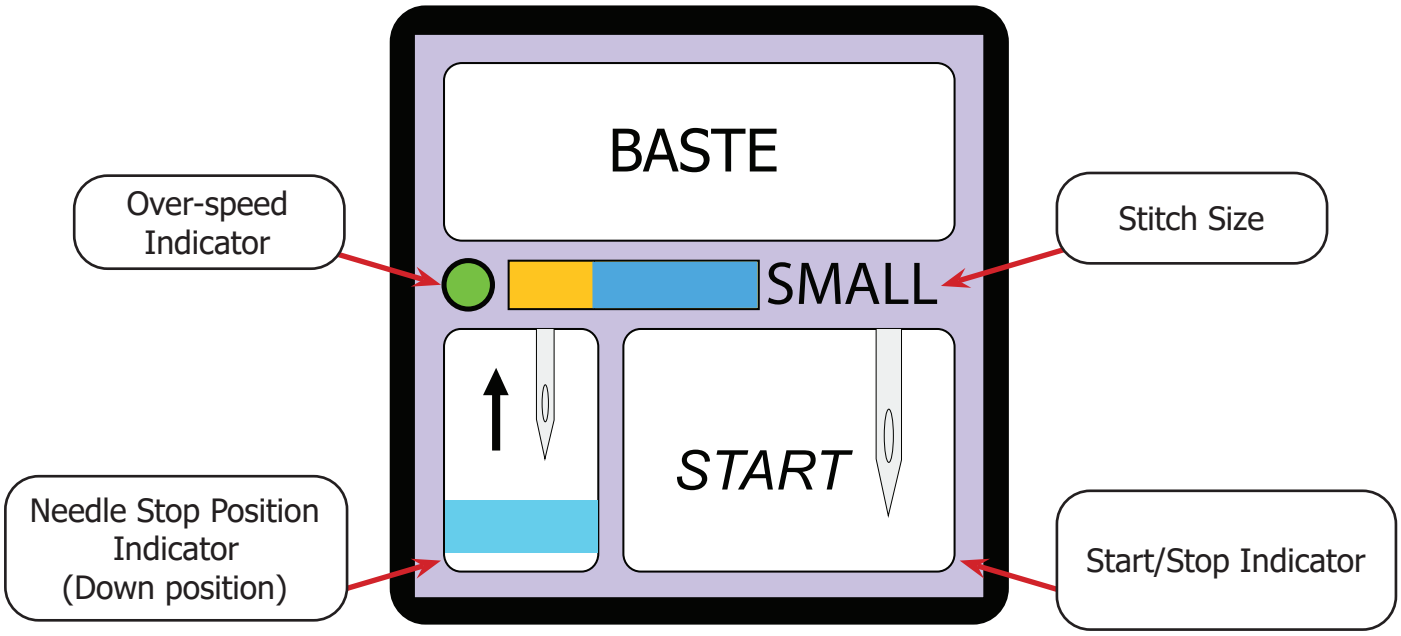
   Tip: This setting can be changed to stitches per centimeter (SPC) in the Preferences menu (see page 48).
2. Check the **needle stop position indicator** to see if the needle will stop in the up or down position when stitching is inactive. To change the needle stop position, hold down the needle up/down button on the handlebar for three seconds.
3. Position the quilting machine over the quilt where you would like to stitch.
4. Press the start/stop quilting button on the handlebars to begin stitching. Move the machine across the quilt to place the stitches. Moving too quickly for the regulated quilting will cause a beeping alarm to sound and the **over-speed indicator** to turn red. This alarm can be disabled in the Preferences menu (see page 48).

   Note: When quilting, the **Start/Stop indicator** will read *STOP* to let you know that stitching is active and that if you press the start/stop button on the handlebars, stitching will stop. When stitching is not active, the start/stop indicator will show *START*.

Using the Baste Quilting Mode

Use the basting mode to create loose, temporary stitches to hold layers of fabric together while quilting.

The baste quilting mode can be accessed by selecting "Baste" from the Main Menu.



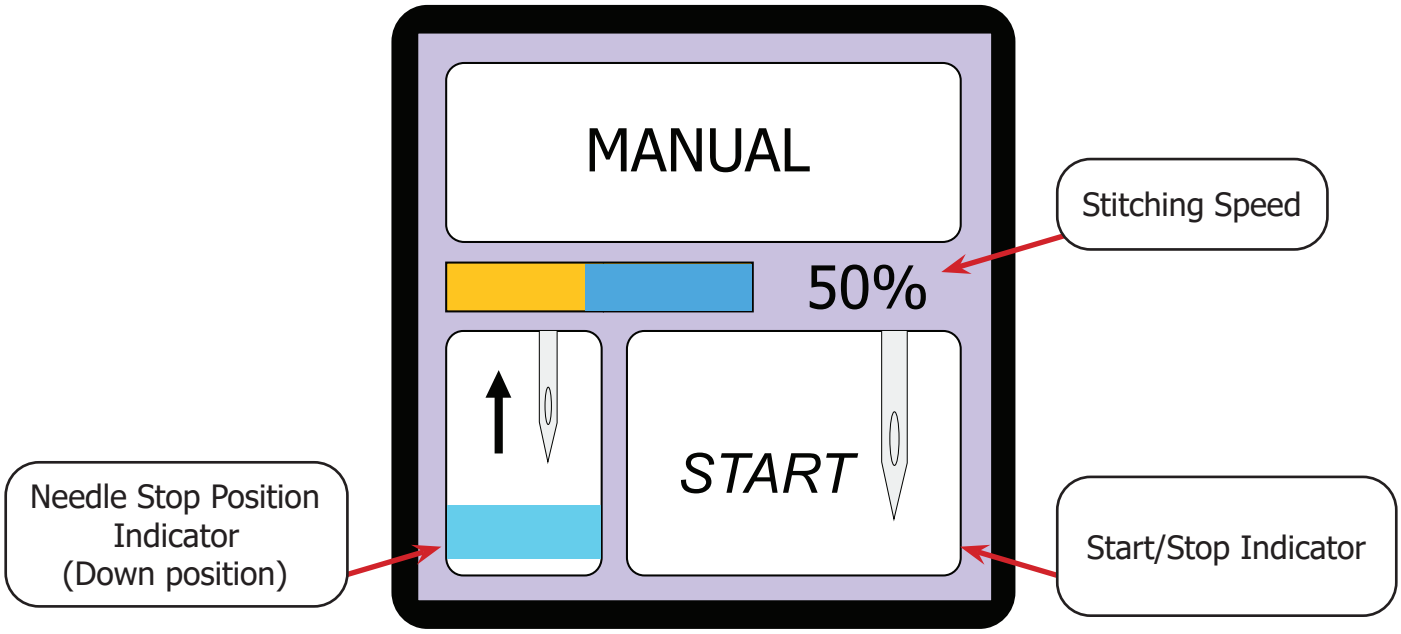
1. Check that the **stitch size** is the desired length (small, medium, or large).
   - Press the up button on the handlebars to increase the stitch length.
   - Press the down button on the handlebars to decrease the stitch length.
2. Check the **needle stop position indicator** to see if the needle will stop in the up or down position when stitching is inactive. To change the needle stop position, hold down the needle up/down button on the handlebar for three seconds.
3. Position the quilting machine over the quilt where you would like to baste.
4. Press the start/stop quilting button on the handlebars to begin stitching. Move the machine across the quilt to place the stitches. Moving too quickly for the machine's stitch length will cause a beeping alarm to sound and the **over-speed indicator** to turn red. This alarm can be disabled in the Preferences menu (see page 48).

   Note: When quilting, the **Start/Stop indicator** will read *STOP* to let you know that stitching is active and that if you press the start/stop button on the handlebars, stitching will stop. When stitching is not active, the start/stop indicator will show *START*.

Using the Manual Quilting Mode

In this quilting mode, the machine produces stitches at a certain speed. It's up to the quilter to move the machine the distance needed to get the desired stitch length. This mode is useful for small, continuous stippling patterns.

The manual quilting mode can be accessed by selecting "Manual" from the Main Menu.



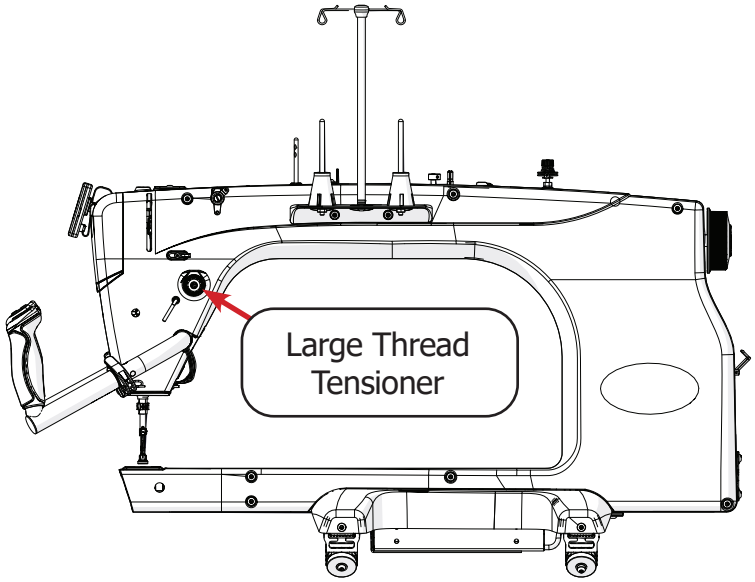
1. Check that the **stitching speed** is the desired speed. The stitching speed is displayed as a percentage of the maximum machine speed of 1800 stitches per minute.
   - Press the up button on the handlebars to increase the stitching speed.
   - Press the down button on the handlebars to decrease the stitching speed.
2. Check the **needle stop position indicator** to see if the needle will stop in the up or down position when stitching is inactive. To change the needle stop position, hold down the needle up/down button on the handlebar for three seconds.
3. Position the quilting machine over the quilt where you would like to stitch.
4. Press the start/stop quilting button on the handlebars to begin stitching. Move the machine across the quilt to place the stitches. Moving quickly will create larger stitches. Moving slowly will create smaller stitches.

   Note: When you're quilting, the **Start/Stop indicator** will read *STOP* to let you know that stitching is active and that if you press the start/stop button on the handlebars, stitching will stop. When stitching is not active, the start/stop indicator will show *START*.

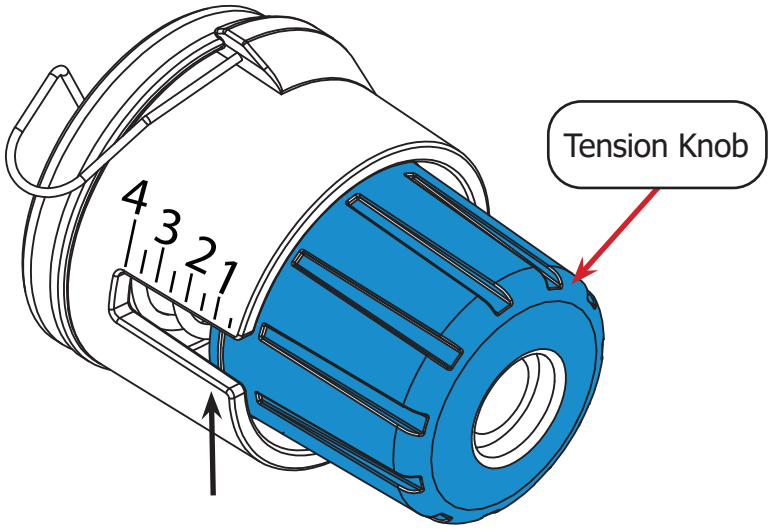
Adjusting Thread Tension

Proper thread tension prevents unwanted puckering, poorly-formed stitches, and malfunctions that can damage the fabric. Test your thread tension on extra materials before sewing on a project.

Tip: Bottom thread tension is addressed in "Loading the Bobbin Case" (see page 29).



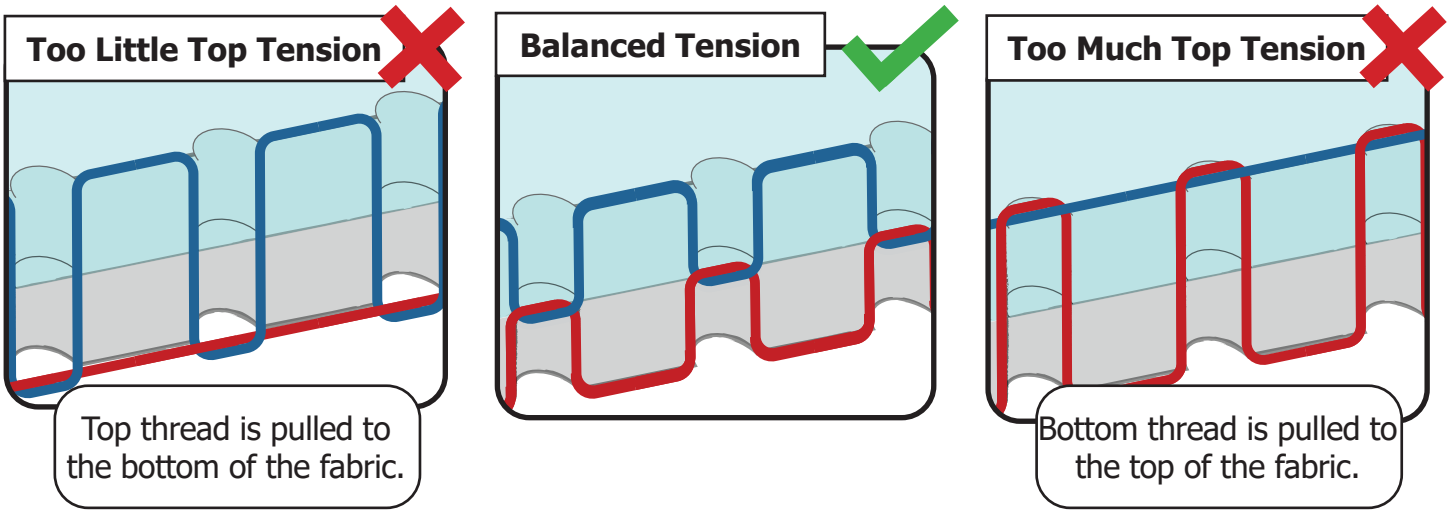
1. Loosen the **tension knob** on the **large thread tensioner** to set the tension to "1." The bottom of the tension knob will line up with the number that the tension is set to.



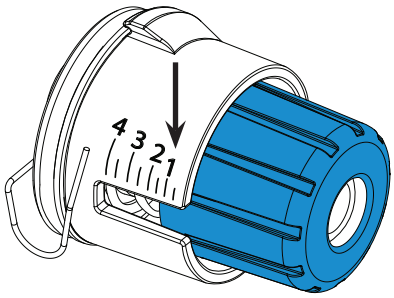
Note: Setting "1" is the lowest tension for your machine, and is an ideal starting place to find the correct top tension.

Adjusting Thread Tension (Continued)

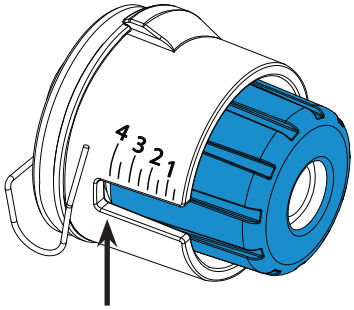
2 Slowly increase the tension while stitching into scrap material. When the thread tension is balanced, the top and bottom thread (shown in blue and red) will knot in the middle of the fabric layers.



- If the **bobbin (bottom) thread** (shown in red) is pulled through the top layer of fabric, there is too much top tension. Loosen the tension by turning the large thread tensioner knob toward setting "1."

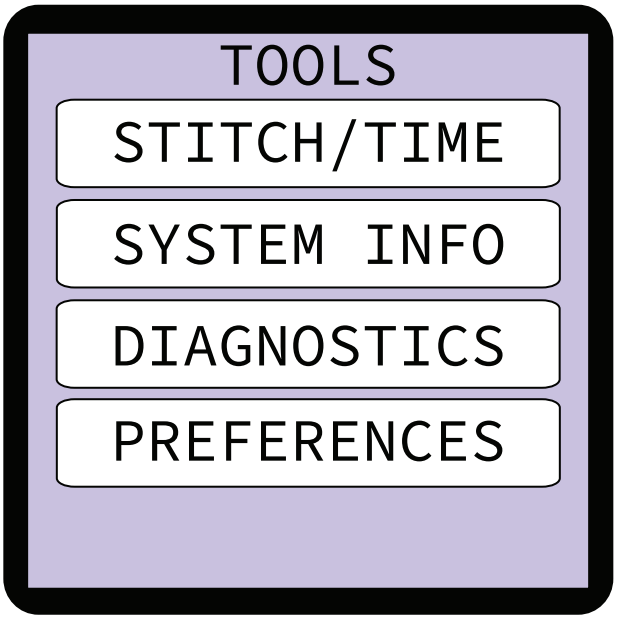


- If the **top thread** (shown in blue) is pulled down through the bottom layer of fabric, there is too little top tension. Increase the tension on the top by turning the large thread tensioner knob toward setting "4." Stop turning the knob when desired tension is acheived.



Using the Tools Menu

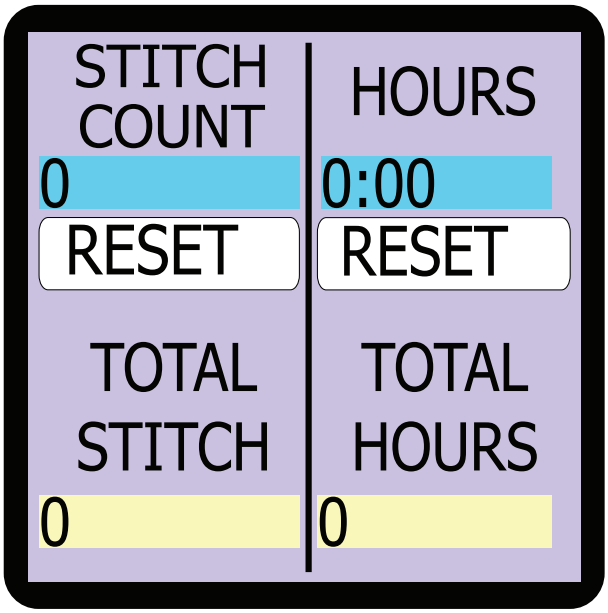
The Tools menu provides access to the Stitch/Time feature, System Information, Diagnostics tests, and Preferences.



- **Stitch/Time** can be used to track the number of stitches sewn and hours machine has run.
- **System Information** displays the control firmware versions for the machine motor and the OLED Display.
- **Diagnostics** tests should be used at the direction of a Grace Company technician to troubleshoot problems with the machine.
- **Preferences** is where machine defaults can be customized.

Tracking Stitch Count and Run Time

The Stitch/Time tool is reached by choosing Tools from the Main Menu, and then by selecting Stitch/Time.



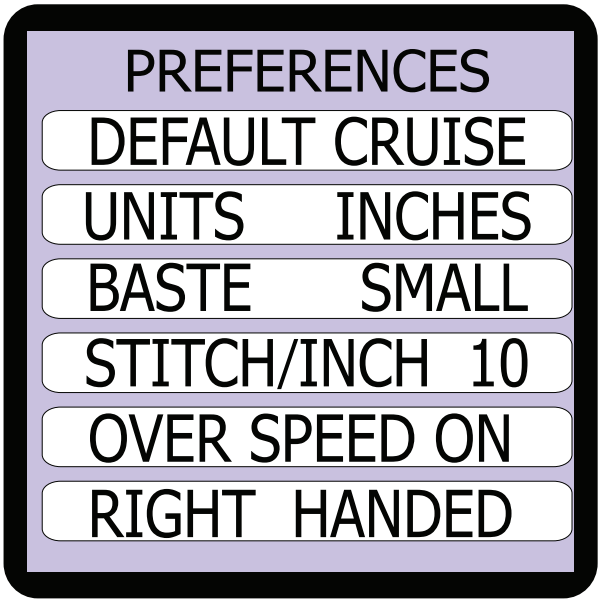
This tool tracks the total hours the machine has run, and the total stitch count. These are displayed at the bottom of the screen and cannot be reset.

It can also be used to track the stitch or hour count for individual projects. Select Reset to return the Stitch Count to 0 or Hours to 0:00 at the start of the project.

Tip: It is recommended to oil your machine after 20 hours of use. The Tracking Stitch/Time count can help keep track of when your machine is due to be oiled.

Choosing Machine Settings

Machine defaults can be customized in the Preferences menu. Access the Preferences menu by choosing Tools from the Main Menu, and then selecting Preferences.



Here are a list of the options available for each setting:

- **Default:** This setting determines the quilting mode or menu the machine will use automatically when powered up. The default can be set to: precise, cruise, baste, menu, or manual by pressing select on the handlebar controls.
- **Units:** Use this setting to switch between inches and metric (centimeters).
- **Baste:** This setting will determine the preset stitch size for the baste quilting mode. It can be set to small, medium, or large.
- **Stitch/Inch:** Determines the preset number of stitches per inch when using the regulated precise or regulated cruise quilting mode. The SPI (stitches per inch) can range from 4 to 16. If changed to centimeters using the Units setting above, this setting can range from 1.5 to 6.2 stitches per centimeter (SPC).
- **Over Speed:** Select to turn on or off the over-speed indicator in regulated precise or regulated cruise quilting modes.
- **Right-Handed** or **Left-Handed:** This will reverse the buttons of the handlebar controls.

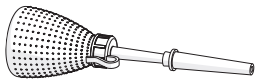
Maintaining the Machine

Keep your machine performing at its peak by practicing good machine maintenance habits.

This section of the manual covers oiling the machine, changing the needle, adjusting the bobbin cam and hopping foot, and reinstalling the needle plate.

Preparing the Oil Bottle

Parts & Tools Needed:



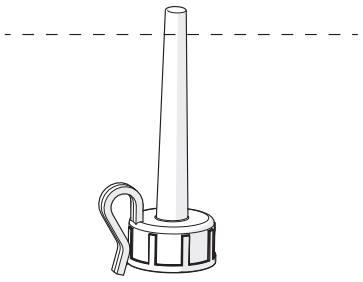
Oil Bottle

- Scissors (not included)

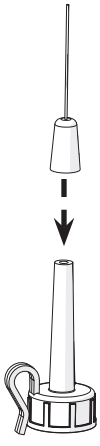
Instructions

Take the following steps to prepare the oil bottle for use in oiling the machine.

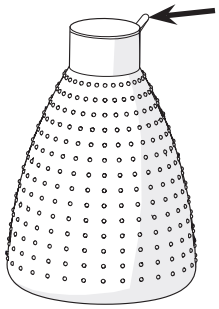
1. Snip off about 1/4th of an inch from the tip of the plastic lid with a pair of scissors.



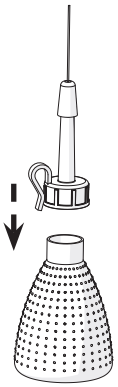
2. Place the applicator needle onto the top of the cap.



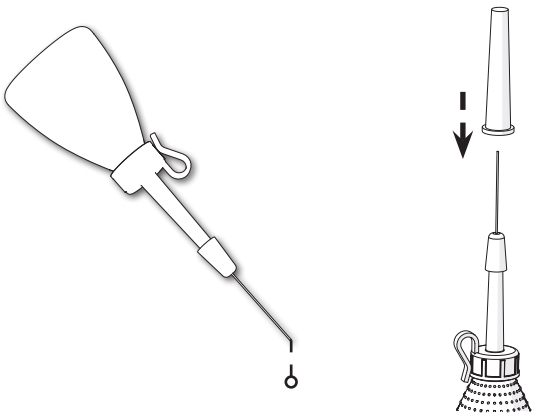
3. Peel the safety foil off the opening of the oil bottle.



4. Carefully screw the lid onto the oil bottle.



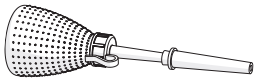
5. Hold bottle upside down and squeeze gently to apply oil. When not in use, cover the applicator needle with the safety cap.



Oiling and Cleaning

Parts & Tools Needed:

Lint Brush



Oil Bottle

- Compressed Air Can (optional; not included)

Instructions

Oil and Clean:	
Machine	• At the start of a new project • After 20 hours of use • After sitting without use for more than 30 days
Bobbin Case	• Every other bobbin change

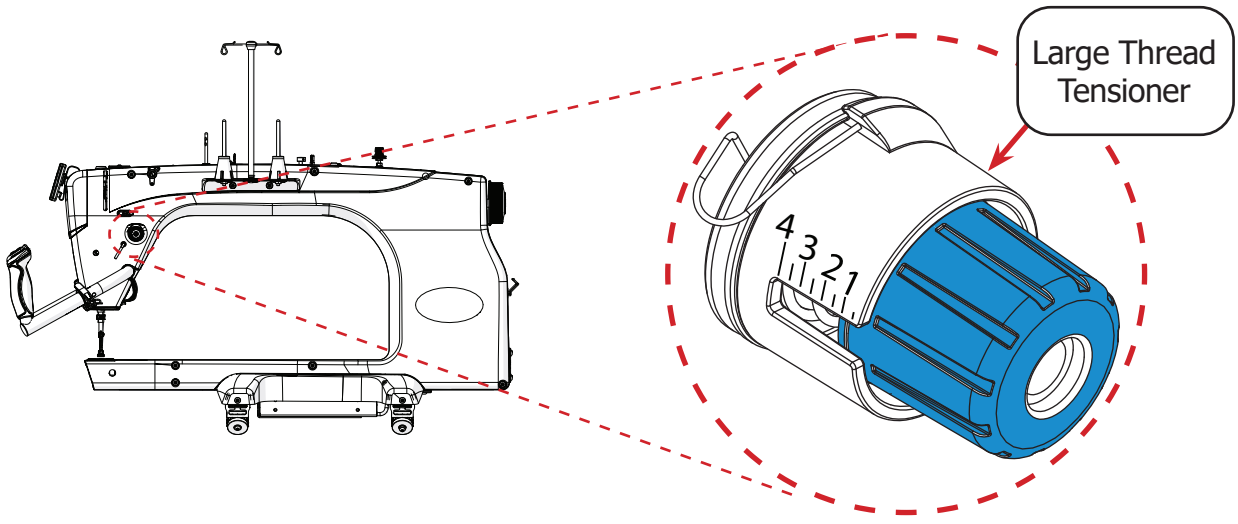
Tip: The Hours Run counter on the System Information page can be used to track hours of quilting time (see page 47).

Take the following steps to clean and oil the machine:

1. Power off the machine.

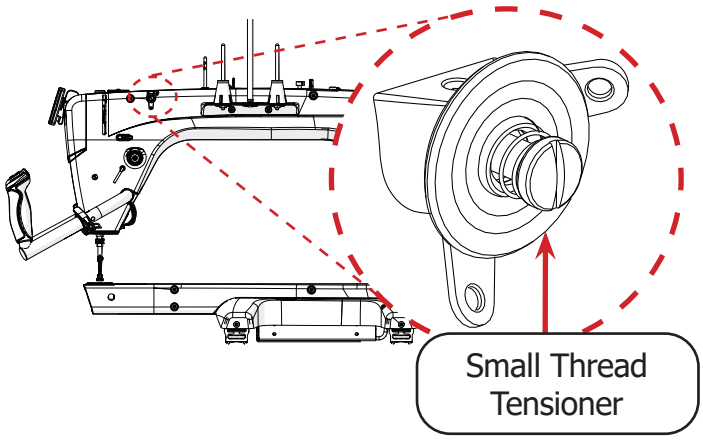
2. Set the **large thread tensioner** setting to "1" to expose the tensioner discs. Use the lint brush or a can of compressed air to clear away lint and thread remnants.

   Note: Lint build-up between the tensioner discs can prevent proper thread tensioning.



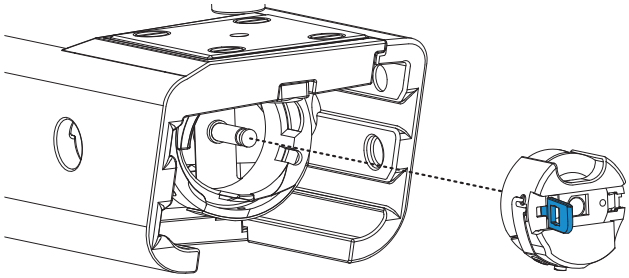
Oiling and Cleaning (Continued)

3 Clear debris from the spring and discs of the **small thread tensioner**.

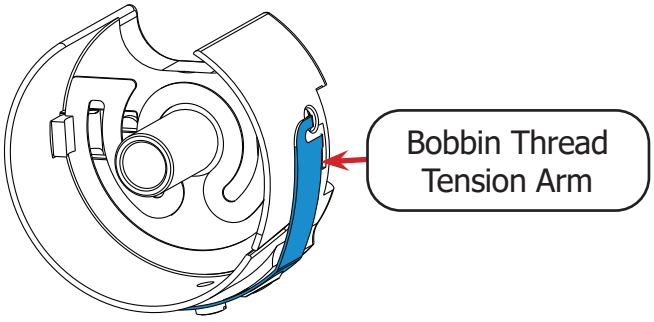


4 Pull the **lever** (shown in blue) on the bobbin case to remove it from the hook assembly.

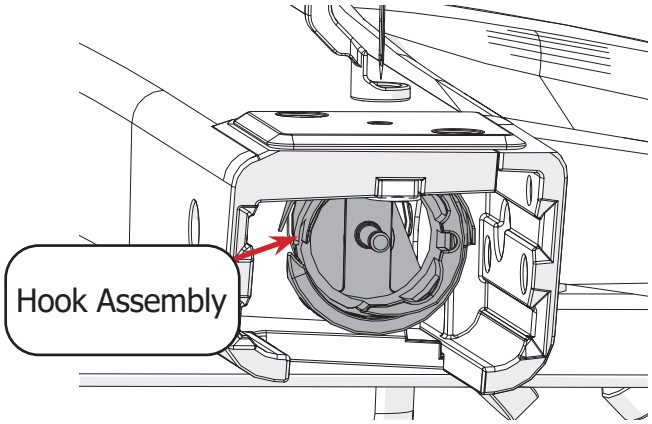
Note: If the case will not release, try raising the needle.



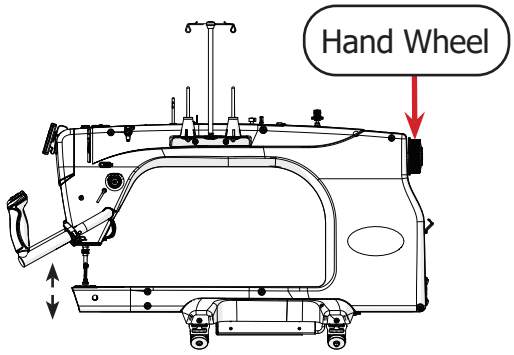
5 Take the bobbin from the case and set it aside. Clean the bobbin case with the lint brush or compressed air. Be sure to clean the area under the **bobbin tension thread arm**.



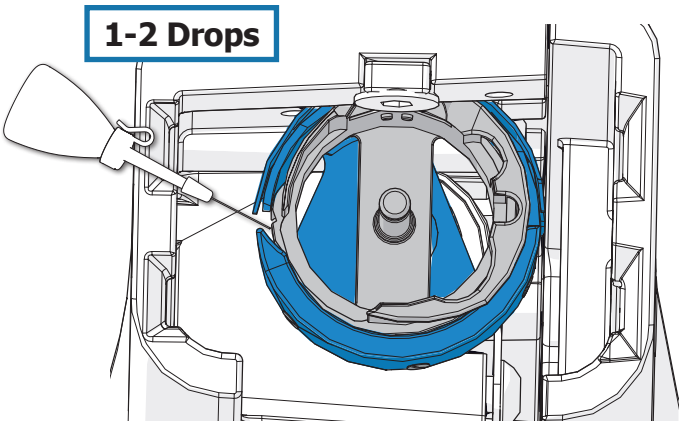
6 In and around the **hook assembly**, clear away any lint, cloth, and thread remnants using the lint brush or compressed air.



7 Rotate the **hand wheel** until the needle is halfway down. This will put the hook in the best position for oiling.

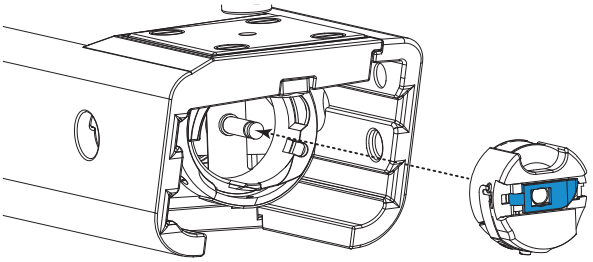


8 Place one to two drops of oil into the hook assembly between the **inner part** (shown in blue) and **outer part** (shown in gray).



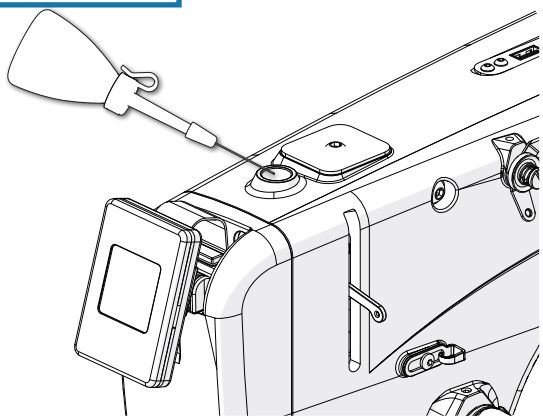
Oiling and Cleaning (Continued)

9 Reload the bobbin case and return it to the machine. For detailed instructions, see “Loading the Bobbin Case” on page 29.



10 Place one to two drops of oil down the hole at the top of the machine, near the display.

1-2 Drops



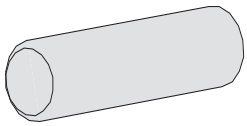
11 Power up the machine and test a few stitches to ensure the machine is running smoothly.

Changing the Needle

For information on selecting a needle, see "Choosing Your Needle" on page 80.

Parts & Tools Needed:

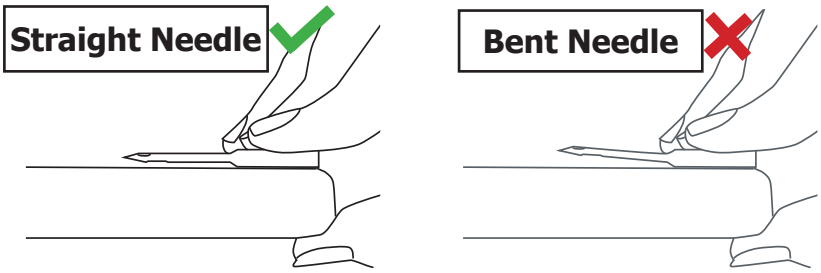
Needle



Needle Magnet

Instructions

A broken, bent, or burred needle may break thread, damage fabric, or even damage the machine. Always check that the needle is in good repair before starting a new project, and replace the needle after eight hours of use.

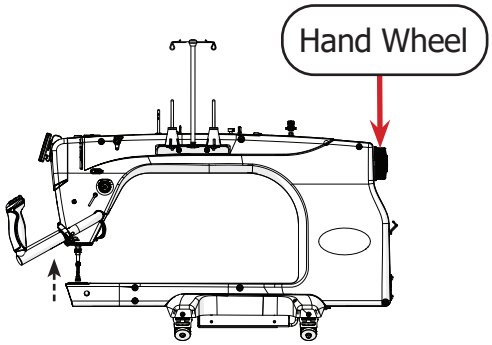


To avoid damage to the machine, please choose an approved needle style from the list below:

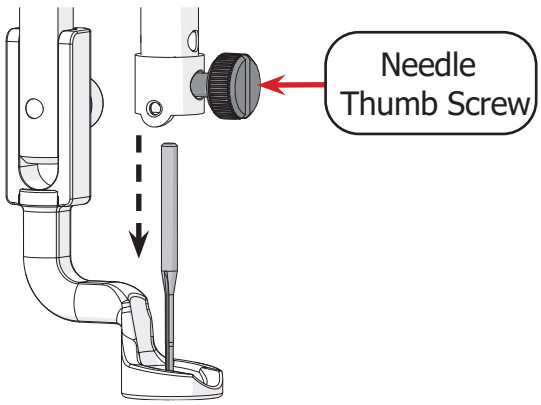
- DPx5 MR
- 135x17 MR
- DPx17 MR
- 135x17 SAN 11
- 3355 MR

1. Power off the machine.

2. Raise the needle to the highest position with the **hand wheel**.

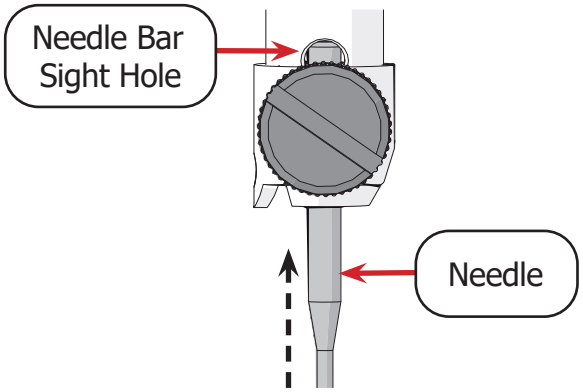


3. Loosen the **needle thumb screw**and pull the needle from the needle bar. If needed, use a flat-head screwdriver.

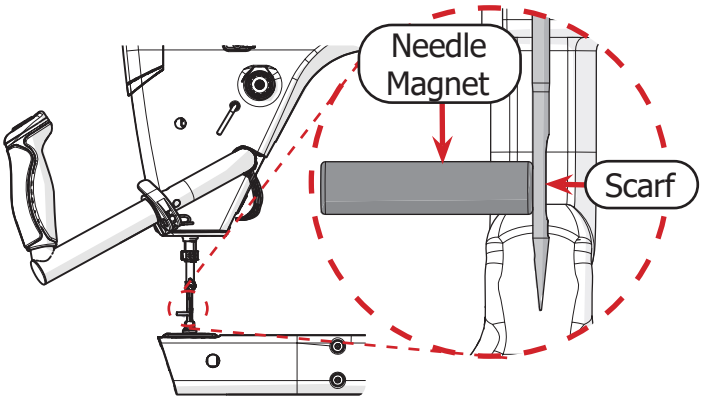


Changing the Needle (Continued)

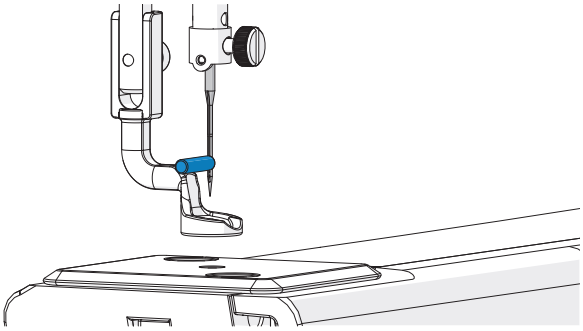
4 Insert the new needle all the way into the needle bar. Check the **needle bar sight hole** above the thumb screw to make sure the **needle** is inserted all the way.



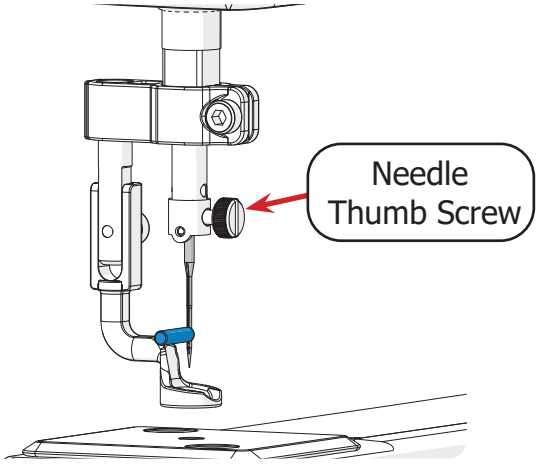
5 The **scarf**, a cut-out on the back of the needle, should face the throat of the machine. Place the **needle magnet** on the opposite side of the scarf.



6 Use the needle magnet as a visual guide. Twist the needle until the **magnet** (shown in blue) points as straight out from the machine as possible. **Note:** Do not attempt to adjust the needle by moving the magnet directly.



7 Tighten the **needle thumb screw**. Do not over-tighten if using the flat-head screwdriver.



Adjusting the Bobbin Cam

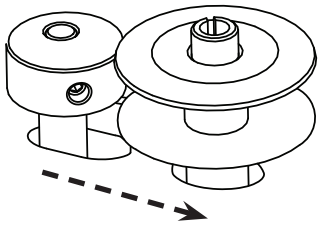
Parts & Tools Needed:

- 1.5 mm Allen Wrench (not included)

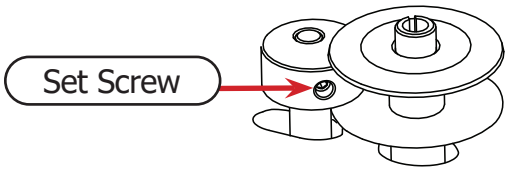
Instructions

The machine's bobbin cam is set so the bobbin will wind completely before the winder shuts off. To change how much the bobbin fills before the winding stops, take the following steps:

1. Power off the machine.
2. Place an empty bobbin onto the bobbin stand and flip the bobbin cam toward the bobbin. This will help estimate how far to adjust the bobbin cam.

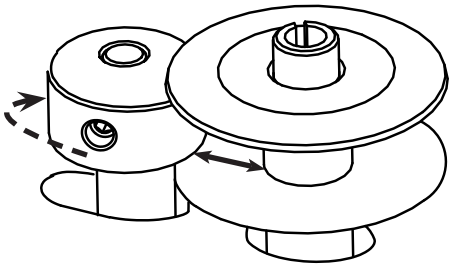


3. Loosen the **set screw** on the bobbin cam with a 1.5 mm Allen wrench until the top of the bobbin cam twists freely.

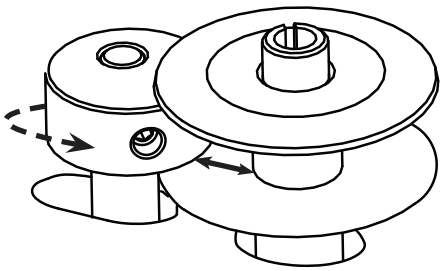


4. Point the set screw toward the bobbin to decrease the amount the bobbin will fill before the winder shuts off. Point the set screw away from the bobbin to increase the fill amount.

Point away from bobbin to increase fill.



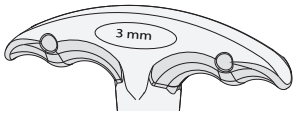
Point toward bobbin to decrease fill.



5. After choosing the desired distance, tighten the set screw with a 1.5 mm Allen wrench.

Adjusting the Hopping Foot

Parts & Tools Needed:



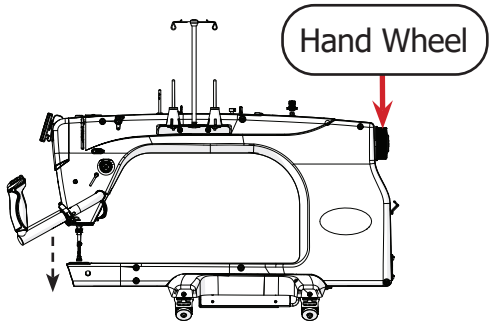
T-handle Allen Wrench 3 mm

Hopping Foot Height Tool

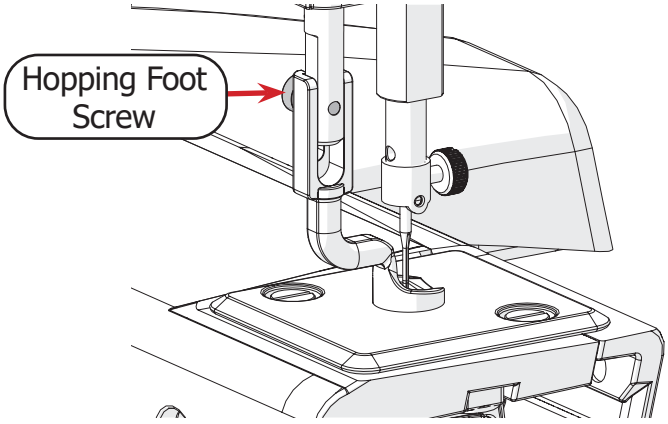
Height Adjustment

When quilting with thick fabric or batting layers, the hopping foot may press down on the quilt too tightly and begin to drag. Alternatively, setting the hopping foot too high, can result in skipped stitches. The hopping foot can be raised or lowered to correct these problems. To adjust the hopping foot height, take the following steps:

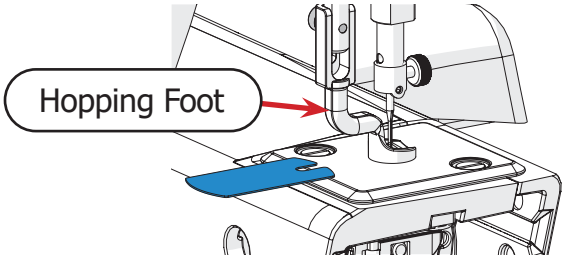
1. Move the machine off the fabric. Use the **hand wheel** to drop the needle bar to the lowest position.



2. With the 3 mm Allen wrench, loosen the **hopping foot screw**.

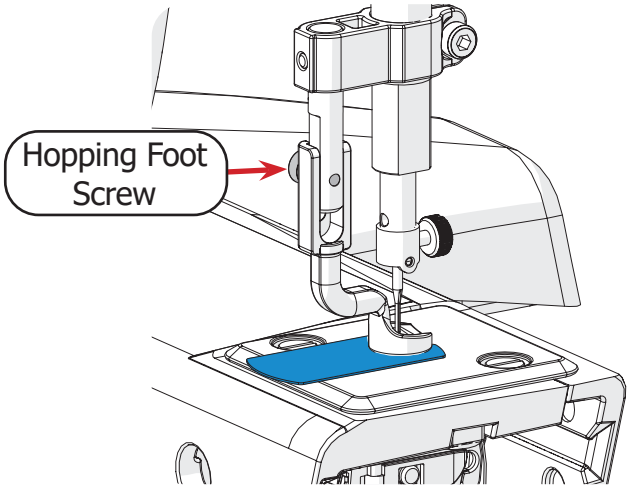


3. Slide the **hopping foot height tool** (shown in blue) underneath the **hopping foot**, around the needle.



Note: The height tool prepares the machine for standard sized quilt batting and two layers of fabric. For thicker quilts, stack sheets of printing paper over the tool to increase room underneath the hopping foot.

4. Re-tighten the **hopping foot screw**.

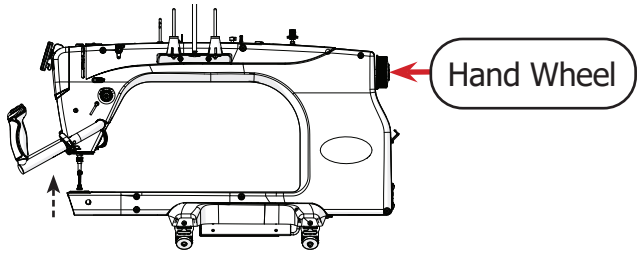


Adjusting the Hopping Foot (Continued)

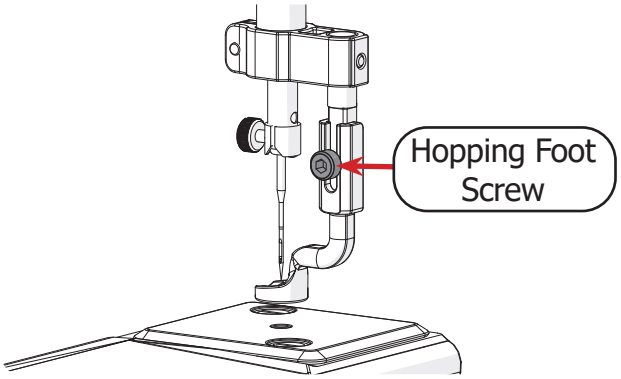
Rotation Instructions

The hopping foot can be rotated to improve line of sight. To rotate the hopping foot, please take the following steps.

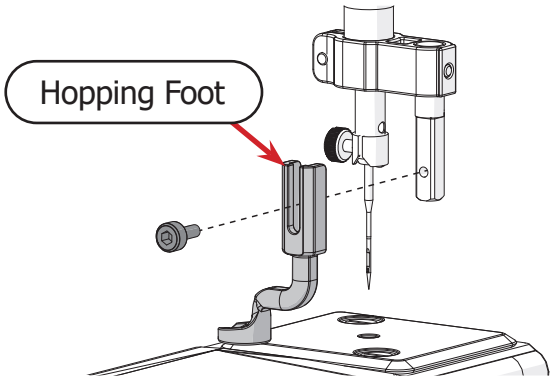
1. Power off the machine.
2. Rotate the **hand wheel** to lift the needle from the hopping foot.



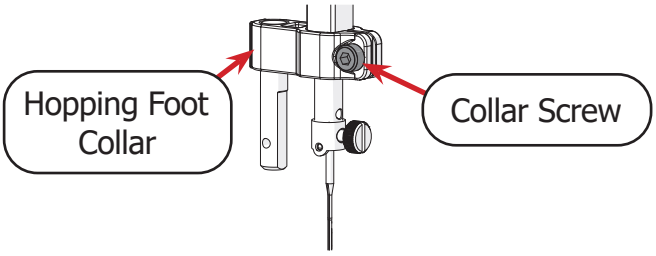
3. Use the 3 mm Allen wrench to remove the **screw** holding the hopping foot.



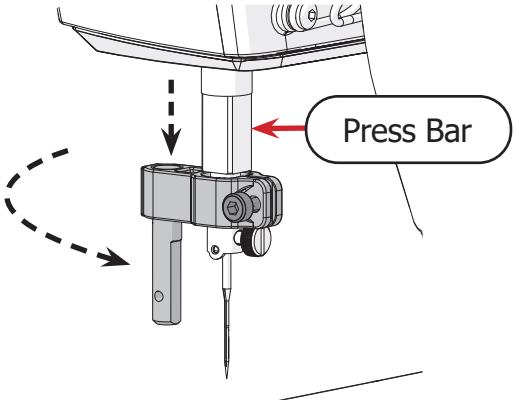
4. Slide the **hopping foot** from the press bar.



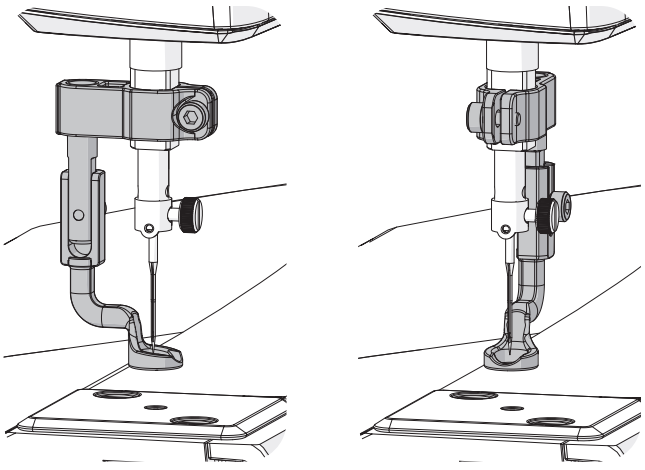
5. With the 3 mm Allen wrench, loosen the **collar screw** that holds the **hopping foot collar** to the press bar.



6. Drop the hopping foot collar below the **press bar** and turn it to the desired position.

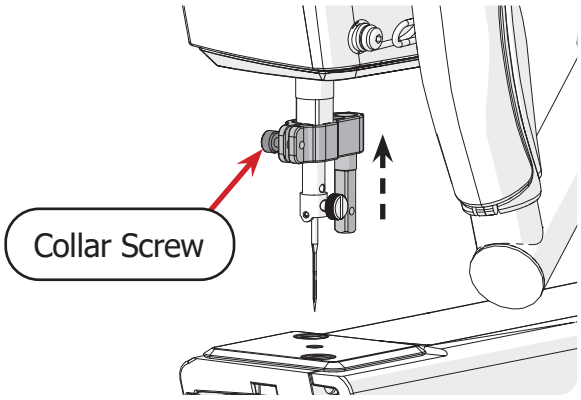


The hopping foot can be set to two positions:

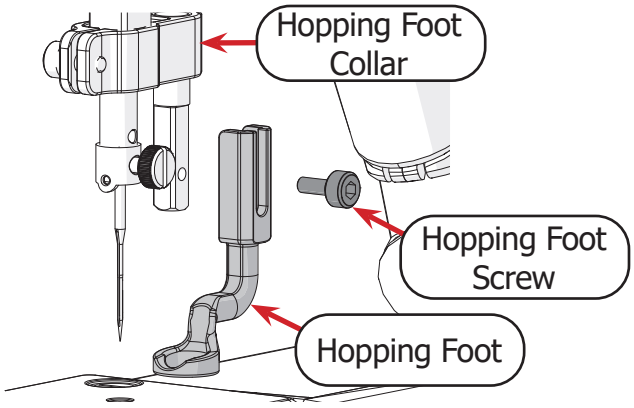


Adjusting the Hopping Foot (Continued)

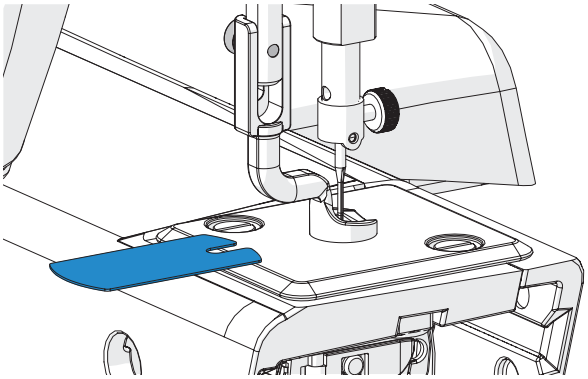
7 Lift the hopping foot collar back up to the press bar, and re-tighten the **collar screw**.



8 Slide the **hopping foot** into the collar and screw in place with the **hopping foot screw**.



9 Double-check your hopping foot height (see page 57).

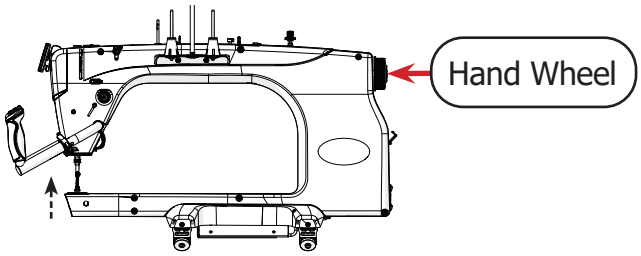


Adjusting the Hopping Foot (Continued)

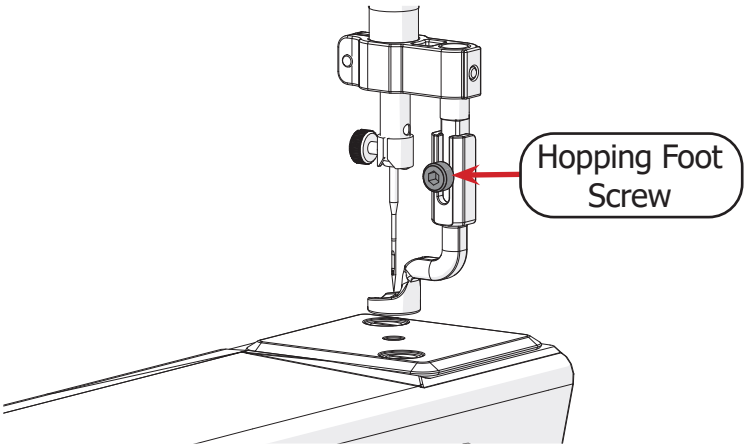
Removal Instructions

To remove the hopping foot for maintenance or to adjust the hopping foot angle, take the following steps:

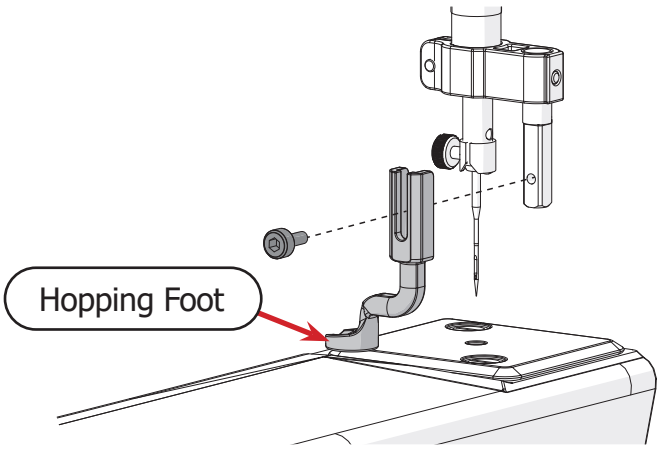
1. Power off the machine.
2. Rotate the **hand wheel** to lift the needle from the inside of the hopping foot.



3. Use the 3 mm Allen wrench to remove the **screw** holding the hopping foot.



The **hopping foot** now slides free from the press bar.

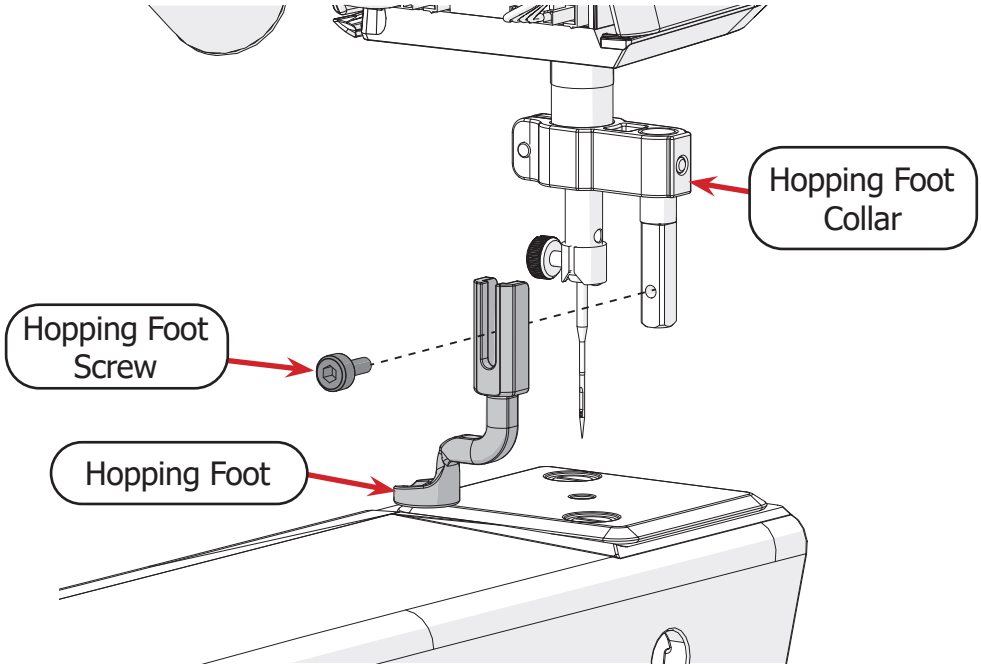


Adjusting the Hopping Foot (Continued)

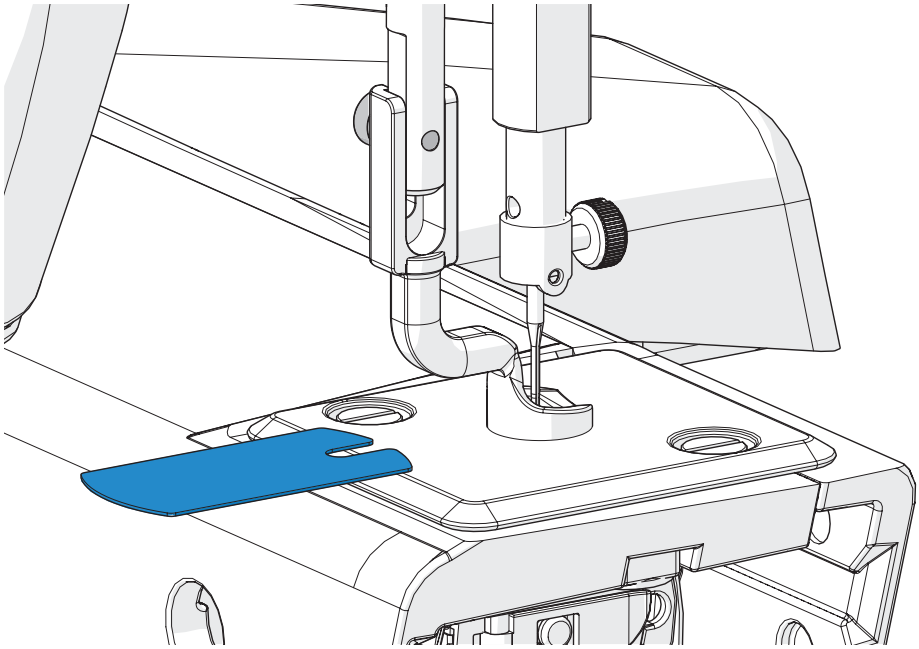
Installation Instructions

To install the hopping foot on your quilting machine, please take the following steps:

1. Power off the machine.
2. Slide the **hopping foot** to the slot in the hopping foot collar. Use the 3 mm Allen wrench and **hopping foot screw** to tighten in place.

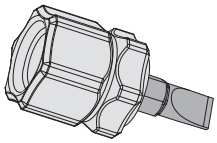


3. Adjust height as needed (see page 57).



Reinstalling the Needle Plate

Parts & Tools Needed:

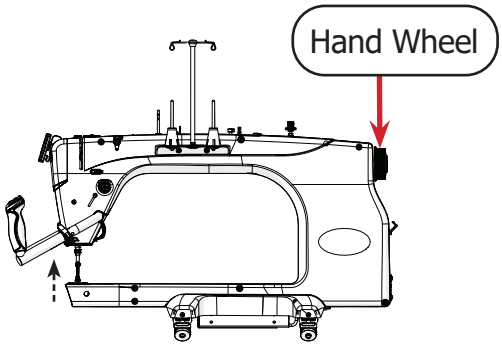


Flat-head Screwdriver

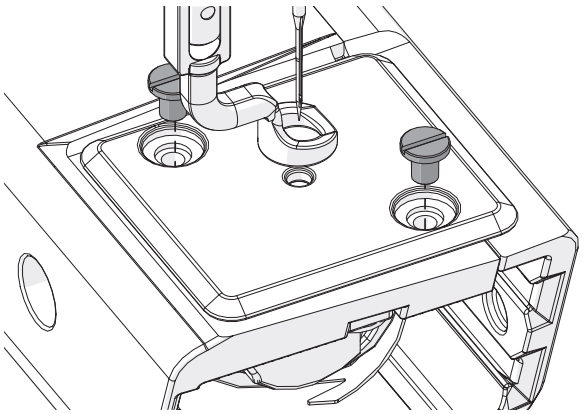
Removal Instructions

To remove the needle plate from the quilting machine, take the following steps:

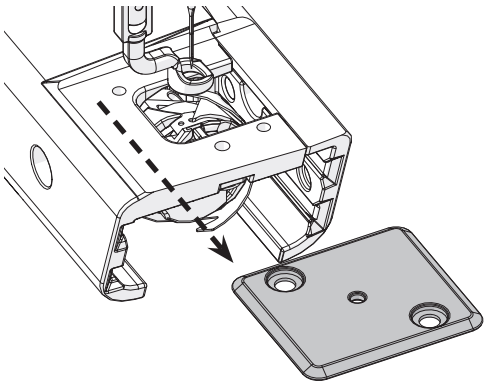
1. Power off the machine and raise the needle to the highest position using the **hand wheel**.



2. Use the flat-head screwdriver to remove the two **needle plate screws** (shown in gray).



3. Slide the **needle plate** (shown in gray) from the machine.

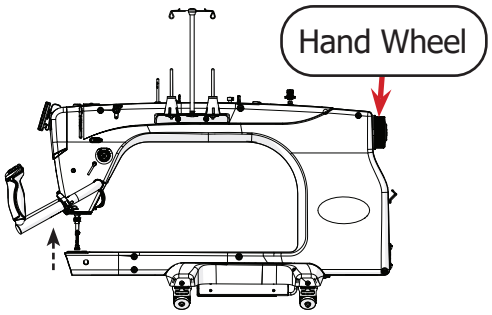


Reinstalling the Needle Plate (Continued)

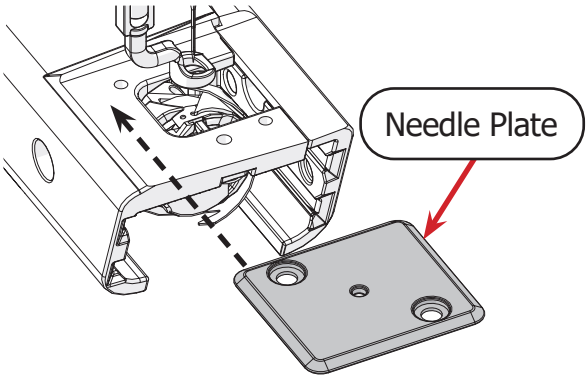
Installation Instructions

To install the needle plate onto the quilting machine, take the following steps:

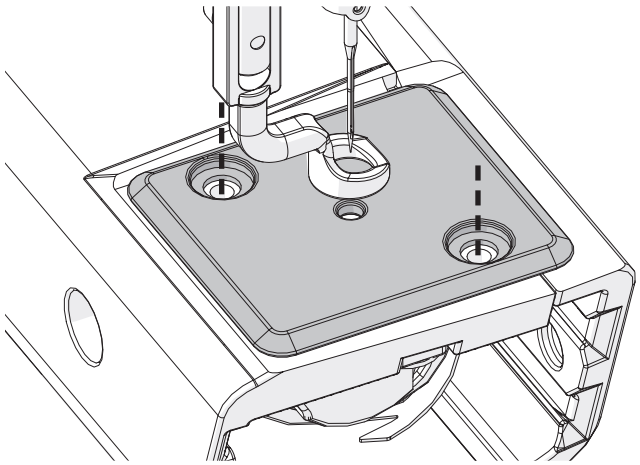
1. Power off the machine. Raise the needle to the highest position using the **hand wheel**.



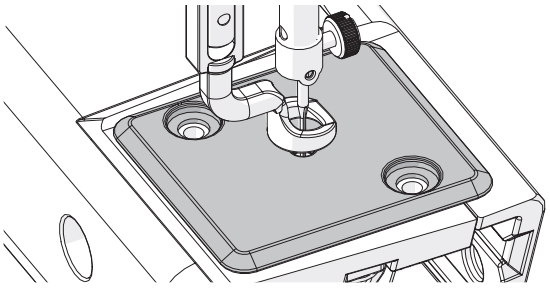
2. Slide the **needle plate** onto the machine.



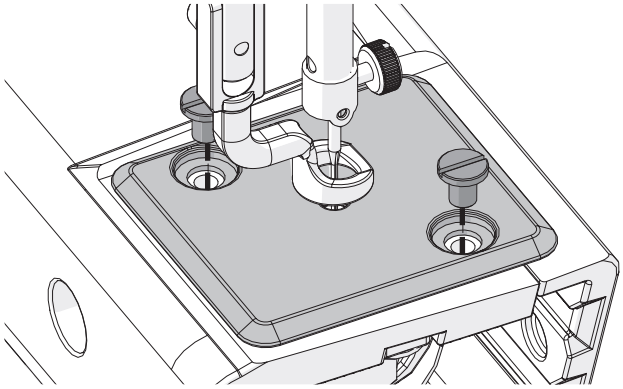
3. Align the screw holes on the needle plate with those on the machine.



4. Slowly lower the needle with the hand wheel. The needle should slide into the center hole without contacting the needle plate.



5. Place the two **needle plate screws** (shown in gray) into the plate. Make sure the needle plate is centered around the needle, and then tighten the screws with the flat-head screwdriver.



Repairs and Diagnostics

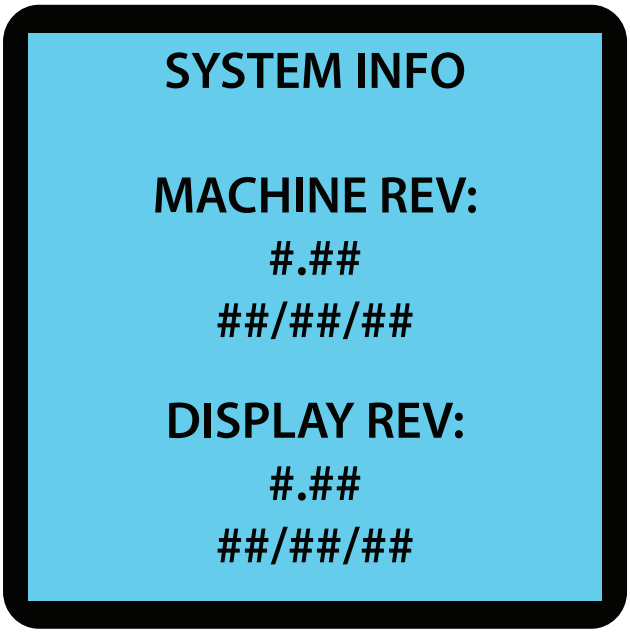
The instructions in this section should only be taken at the direction of a Grace Company support technician. If you are experiencing problems with your machine, please contact our technical support team:

- **Phone:** (800) 264-0644
- **Email:** support@graceframe.com

This section of the manual covers replacing the encoder spring, installing the hook holder, timing the machine, and checking the machine and display firmware versions.

Checking the Firmware

The control firmware versions for the machine motor and the OLED Display are found by selecting Tools from the Main Menu, and choosing System Info.

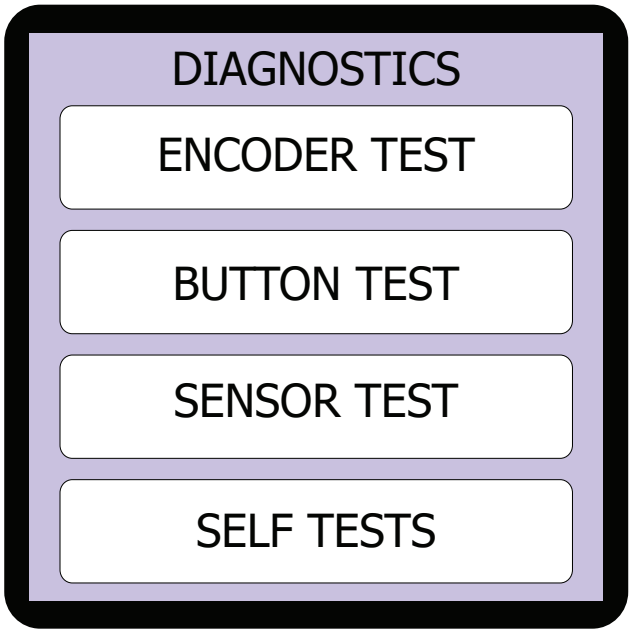


The following information displays:

- **Main Revision:** Shows the latest firmware version for the machine.
- **Display Revision:** Shows the latest firmware version for the touch display.

Running Diagnostics

Diagnostics tests can be reached by selecting Tools from the Main Menu and choosing Diagnostics. Run diagnostics tests at the direction of a Grace Company technician only to troubleshoot problems with the machine.



The following options display on the Diagnostics screen:

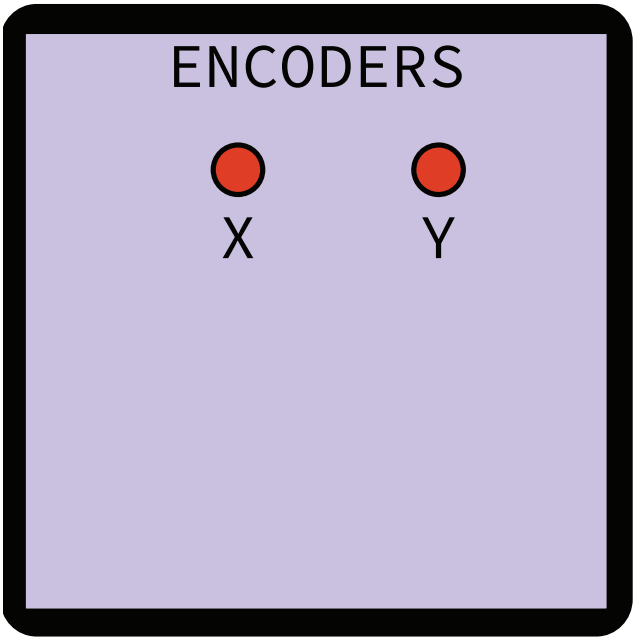
- **Encoder Test**: Select to test that each encoder is working correctly.
- **Button Test**: Select to test that the handlebar buttons are working.
- **Sensor Test**: Choose to test that the needle sensor is functioning.
- **Self Tests**: Select to prompt the machine to run self diagnostic tests.

Running Diagnostics (Continued)

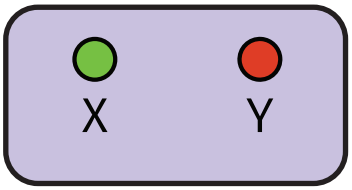
Encoder Test Instructions

To access the encoder test, choose Diagnostics from the Tools menu.

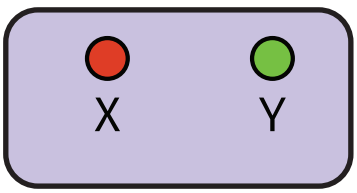
1. The Encoders test screen displays.



2. Move the machine left and right across the frame. The X indicator should turn green while the machine is moving.



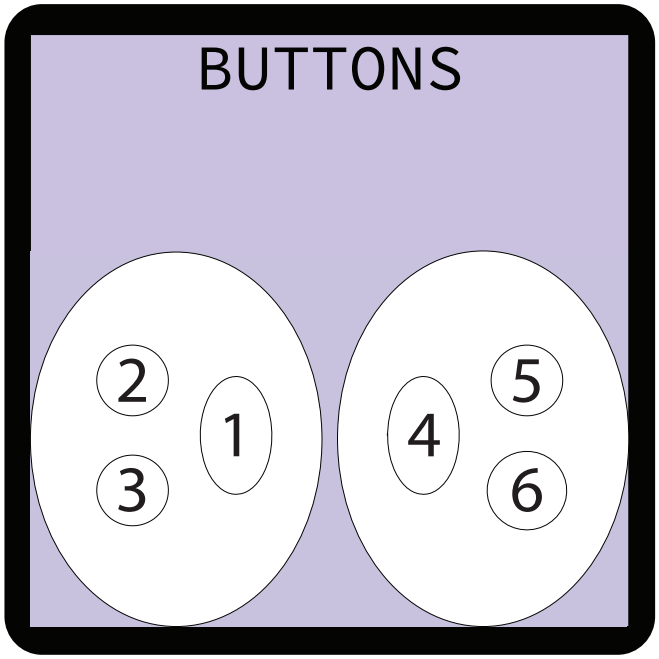
3. Move the machine from front to back across the frame. The Y indicator should turn green while the machine is moving.



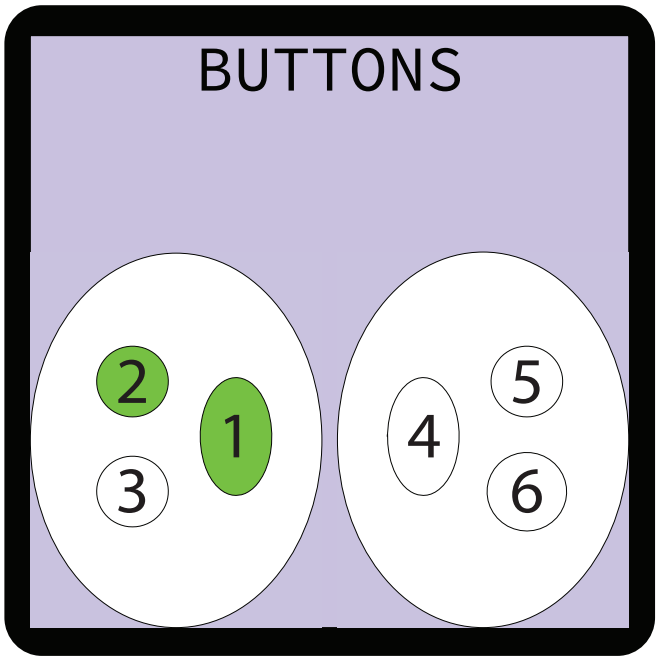
Button Test Instructions

To access the Buttons test, choose Diagnostics from the Tools menu.

1. The Buttons test screen displays.



2. Press each button on the handlebar. The corresponding button indicator will turn green.

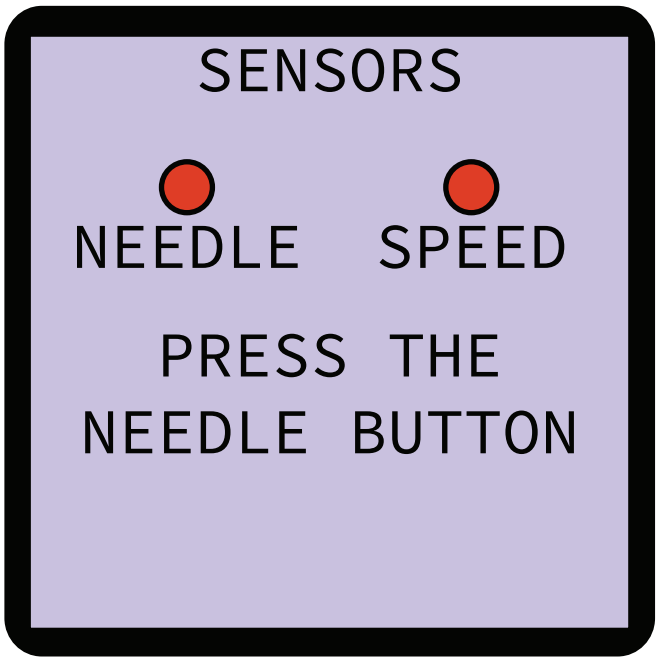


Running Diagnostics (Continued)

Sensor Test Instructions

To access the Sensors test, choose Diagnostics from the Tools menu.

1. The Sensors test screen displays.

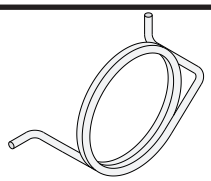


2. Press the needle button (large button on the left handlebar) until the needle drops to the down position.
   - The needle indicator will turn red.
   - The speed indicator will flash green while the needle is moving, and turn red when the needle has stopped.
3. Press the needle button again to raise the needle to the highest position.
   - The needle indicator will turn green.
   - The speed indicator will flash green while the needle is moving, and turn red when the needle has stopped.

Replacing the Encoder Spring

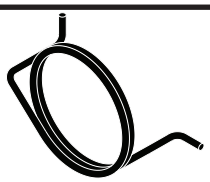
Please speak to a Grace Company support technician before attempting these instructions.

Parts & Tools Needed:

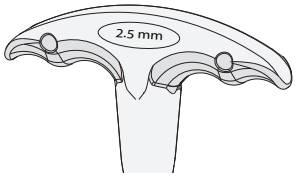


Upper Encoder Spring (Silver)

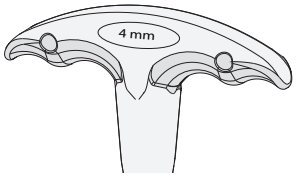
OR



Lower Encoder Spring (Black)



T-handle Allen Wrench 2.5 mm

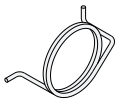


T-handle Allen Wrench 4 mm

Instructions

If the encoder spring is over-tensioned, it may break and need to be replaced. To replace the encoder spring, take the following steps:

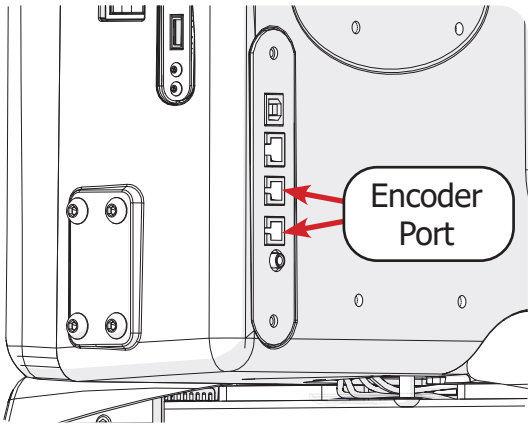
1. Determine the correct spring to use in the repair:



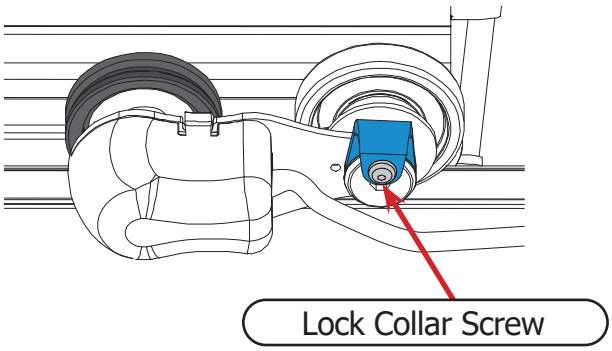
Upper Encoder: Attached to the wheel on the machine. Use the silver spring.

Lower Encoder: Attached to the wheel on the bottom carriage. Use the black spring.

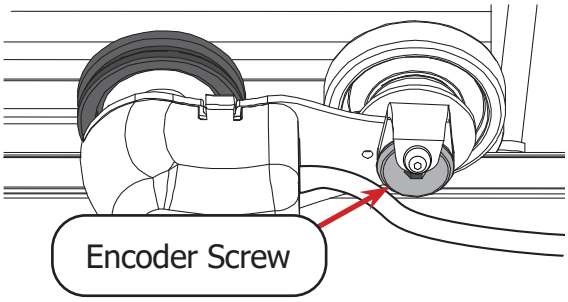
2. Unplug the encoder cable from the machine.



3. Loosen the **lock collar screw** with the 2.5 mm Allen wrench until the **lock collar** (shown in blue) can twist freely.

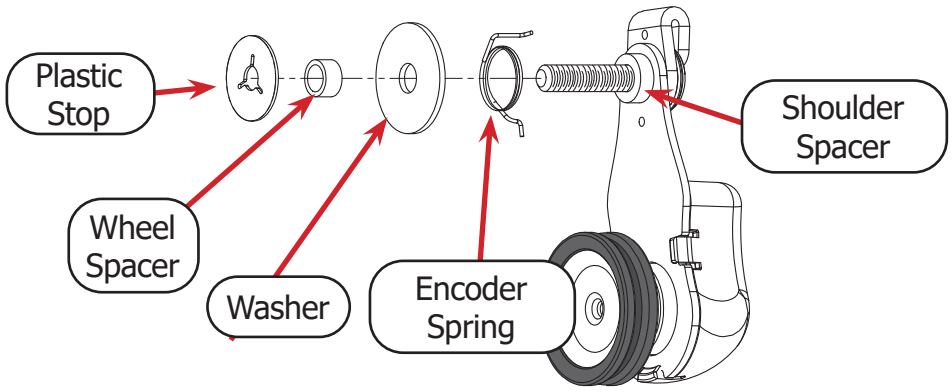


4. Use the 4mm Allen wrench to loosen the **encoder screw** and remove the encoder and wheel.

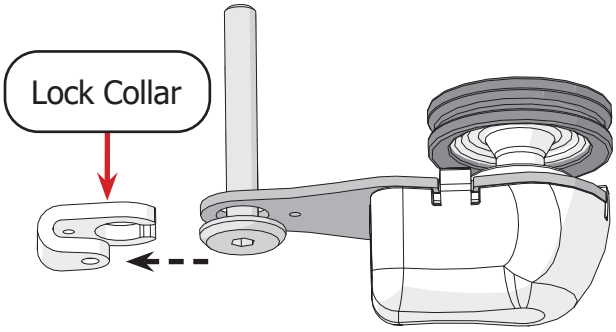


Replacing the Encoder Spring (Continued)

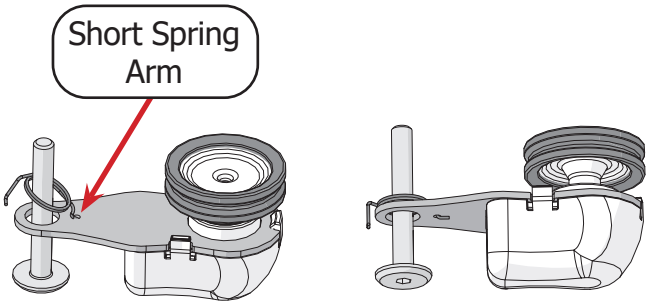
5 Remove the **plastic stop**, **wheel spacer**, **washer**, broken **encoder spring,** and **shoulder spacer** from the encoder.



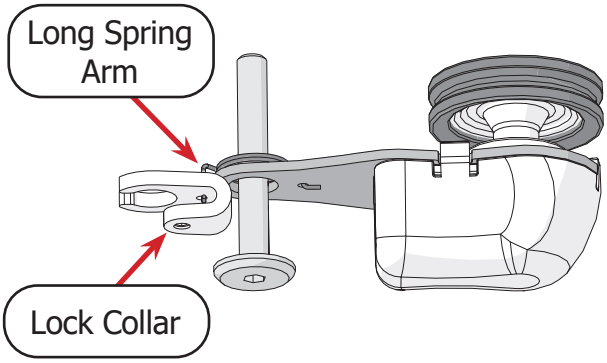
6 Pull on the **lock collar** to remove it from the encoder screw.



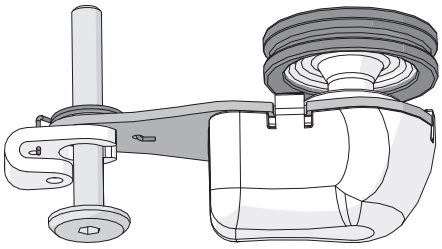
7 Place the replacement spring over the encoder screw, and insert the **short arm** of the spring all the way through the hole on the encoder base.



8 Place the **long arm** of the encoder spring arm into the hole on the encoder **lock collar**.

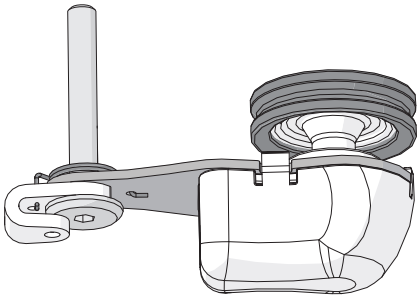


9 Without allowing the arm to slip out of the lock collar, rotate the collar until it wraps around the encoder bolt.

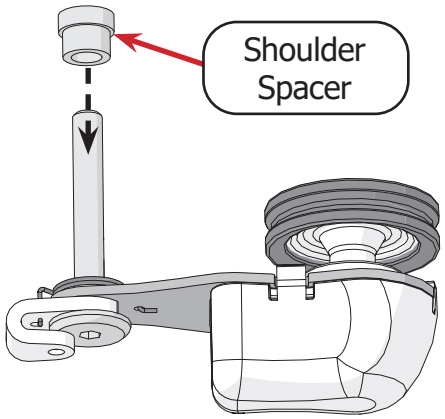


Replacing the Encoder Spring (Continued)

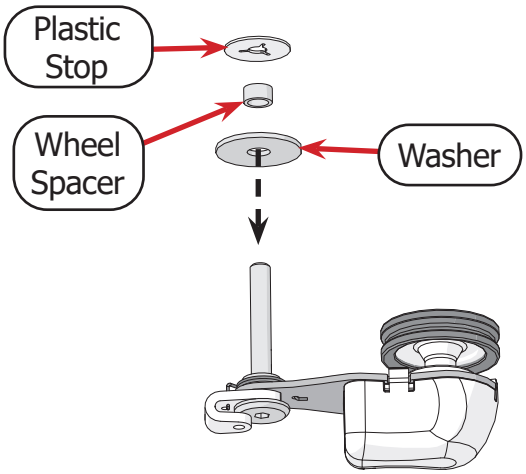
10 Adjust the screw and lock collar so the head of the screw slides in between the lock collar.



11 Slide the **shoulder spacer** onto the screw with the thinner side toward the head of the bolt.



12 Next, place the **washer**, **wheel spacer**, and **plastic stop** onto the encoder screw.



13 Complete the assembly instructions for the encoder you repaired.

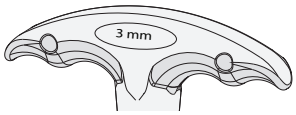
For the upper encoder (silver spring) assembly instructions, see page 21.

For the lower encoder (black spring) assembly instructions, see page 23.

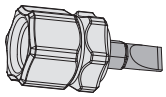
Reinstalling the Hook Holder

Please speak to a Grace Company support technician before attempting these instructions.

Parts & Tools Needed:



T-handle Allen Wrench 3 mm

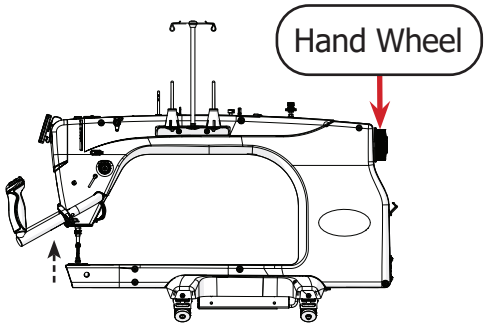


Flat-head Screwdriver

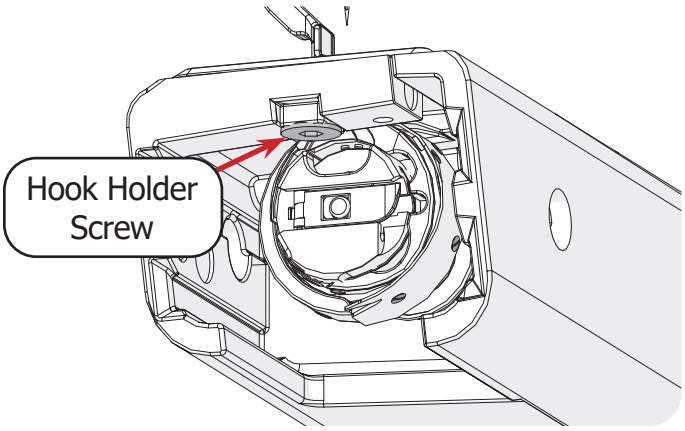
Removal Instructions

The hook holder keeps the hook assembly in place. The following procedure should only be attempted if determined necessary by a Grace Company support technician. If done incorrectly, major machine problems can result.

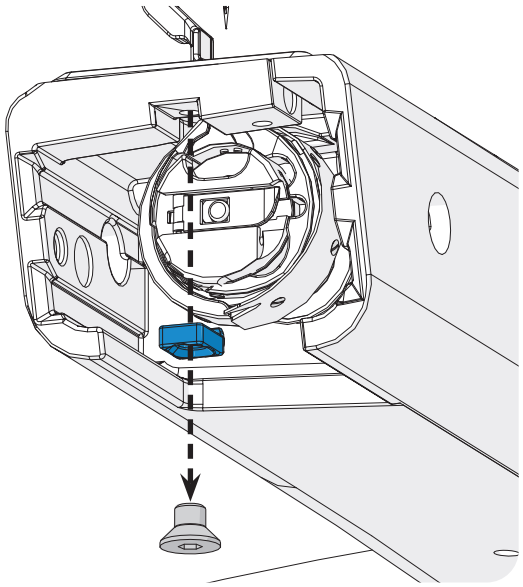
1. Turn off the machine.
2. Rotate the **hand wheel** to raise the needle to the highest point.



3. With the 3mm Allen wrench, remove the **hook holder screw** that attaches the hook holder to the machine.



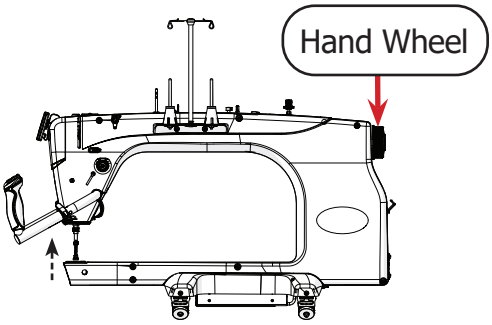
4. Slide the **hook holder** (shown in blue) from the hook assembly.



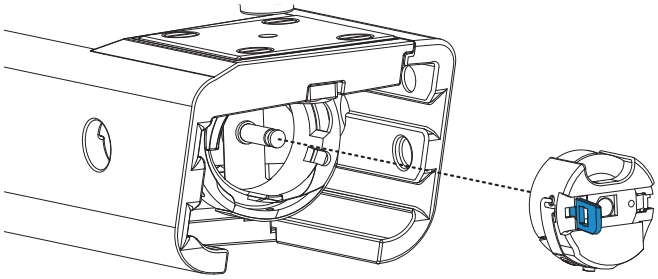
Reinstalling the Hook Holder (Continued)

Installation Instructions

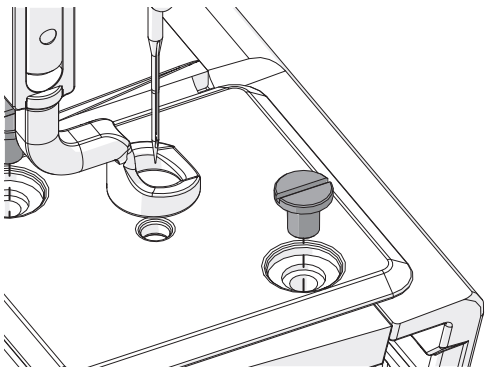
1. Turn off the machine.
2. Rotate the **hand wheel** to raise the needle to the highest point.



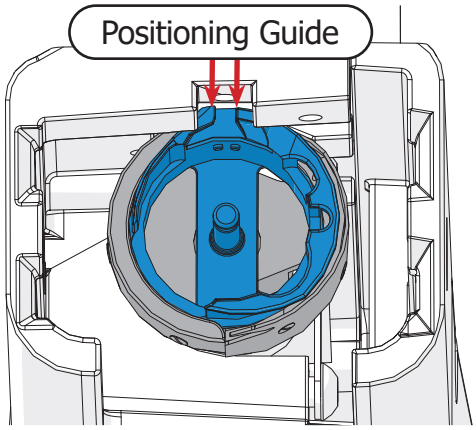
3. Remove the bobbin case (see "Loading the Bobbin Case" on page 29).



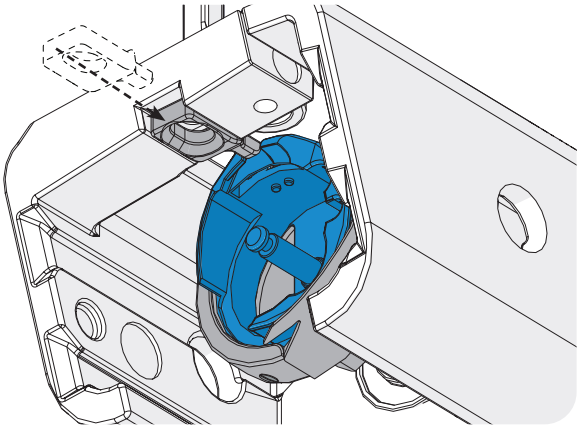
4. Remove the needle plate using the flat-head screwdriver (see "Reinstalling the Needle Plate" on page 62).



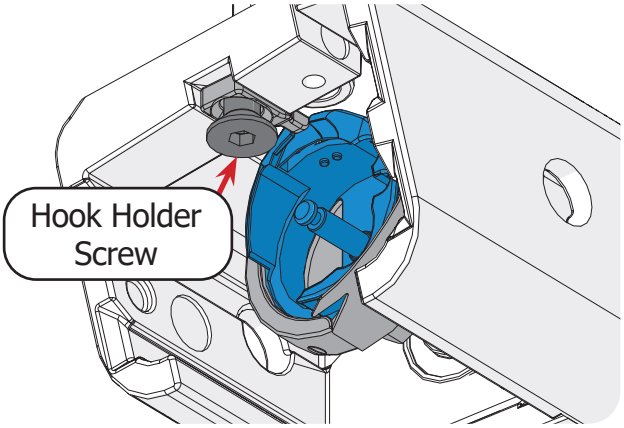
5. Turn the inside portion of the **hook assembly** (shown in blue) so that the **positioning guide** is at the highest point.



6. Slide the finger of the **hook holder** (shown in gray) into the middle of the hook assembly's positioning guide.

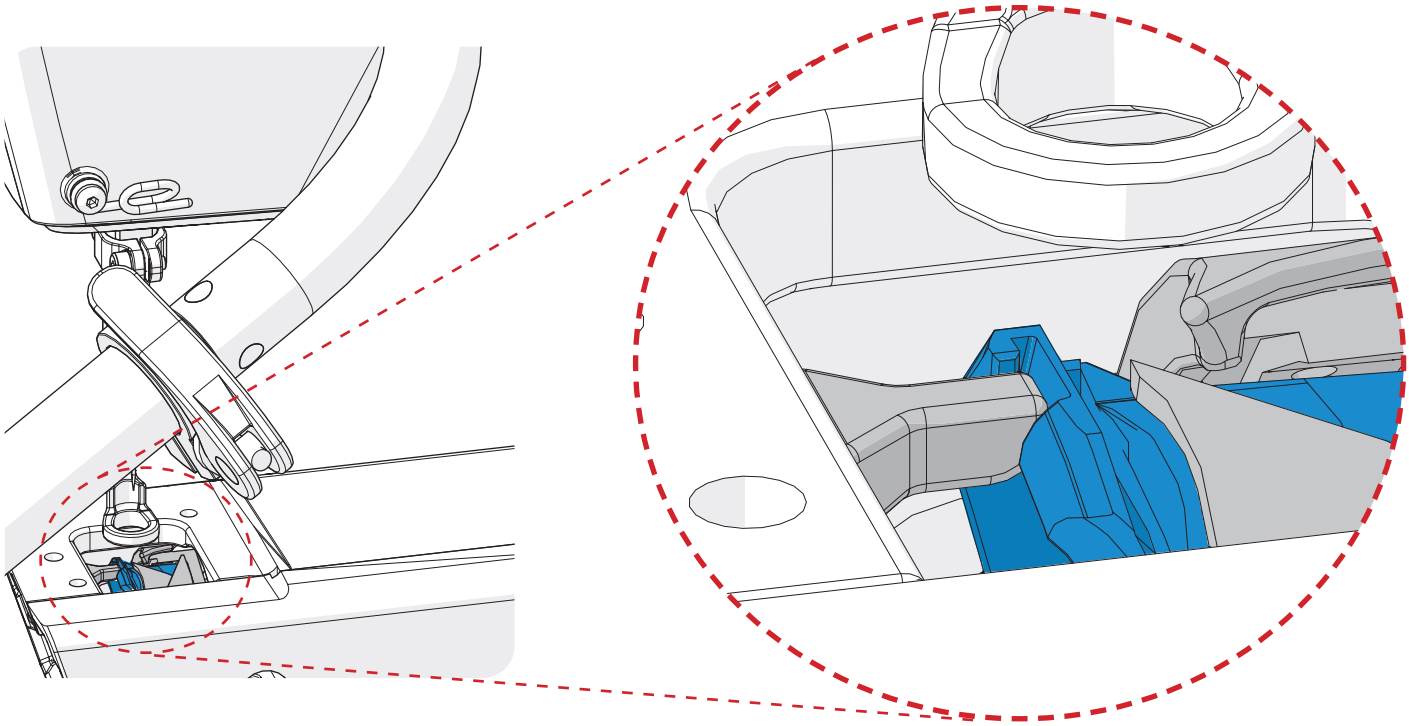


7. Attach loosely with the **hook holder screw**. Do not tighten.

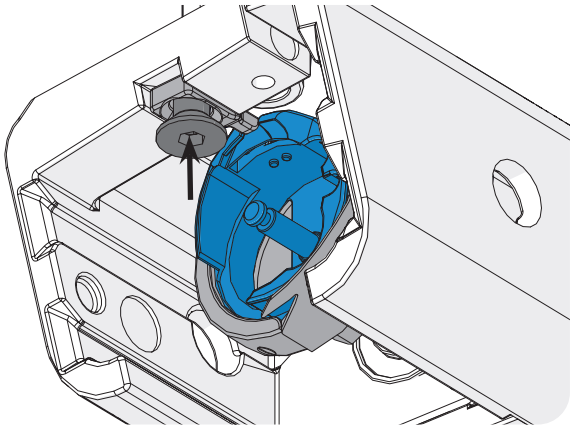


Reinstalling the Hook Holder (Continued)

8 Align the **hook holder** with the inside edge of the **positioning guide**, as shown below.



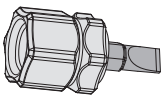
9 Tighten the hook holder screw to fasten the hook holder in place. The inside portion of the hook assembly should no longer rotate freely by hand.



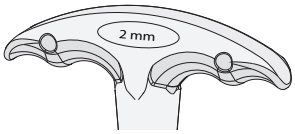
Timing the Machine

Please speak to a Grace Company support technician before attempting these instructions.

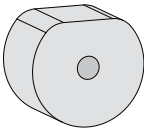
Parts & Tools Needed:



Flat-head Screwdriver



T-handle Allen Wrench 2 mm

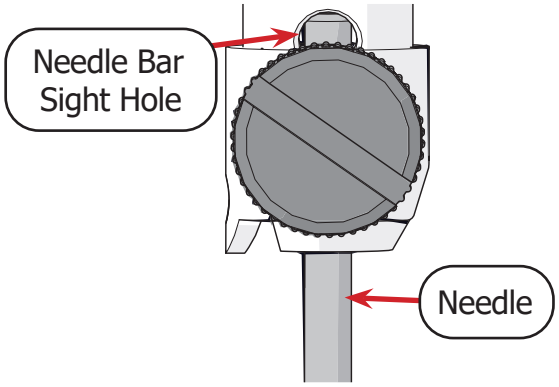


Timing Spacer

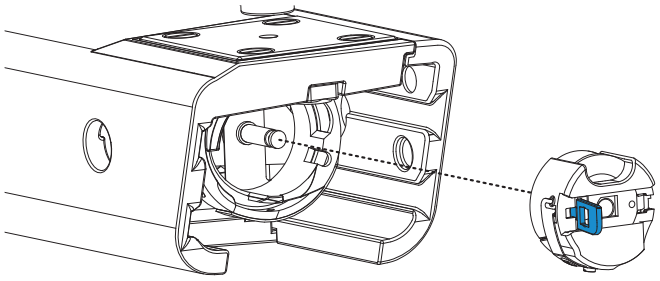
Instructions

Timing your machine aligns the needle and hook assembly so that they are in the correct places during the creation of a stitch. Improper timing can result in damage to the machine and needle, or make sewing impossible. Please consult with a Grace Company support technician before attempting to adjust the timing on your machine.

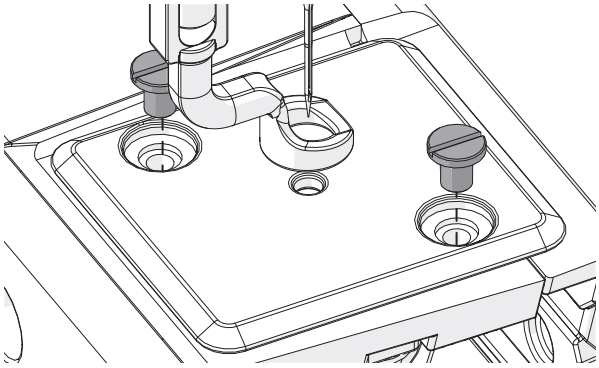
1. Turn off the machine.
2. Check that your **needle** is not bent or damaged, and that it is inserted all the way into the **needle bar** (see page 54).



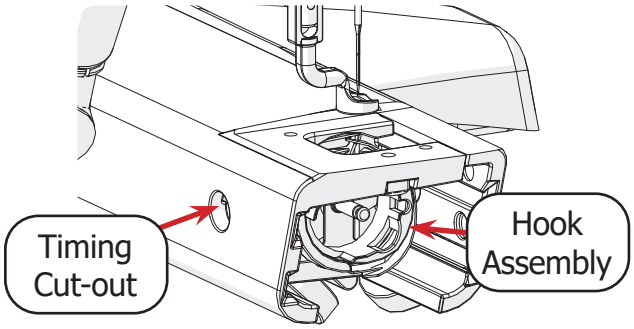
3. Remove the bobbin case from the hook assembly (see page 29).



4. Remove the needle plate (see page 62).

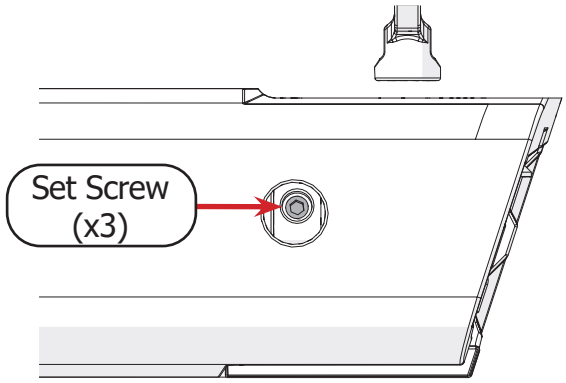


5. Look into the machine's **timing cut-out** and turn the hand wheel. The **hook assembly** will rotate.

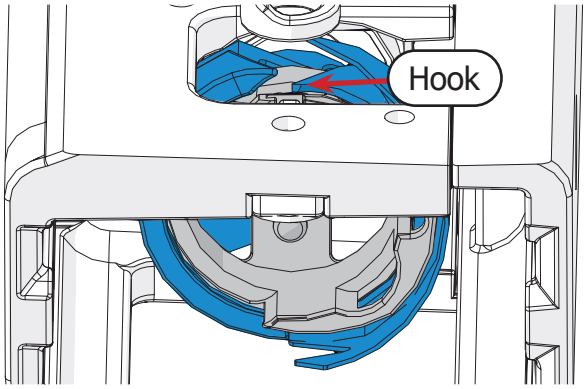


Timing the Machine (Continued)

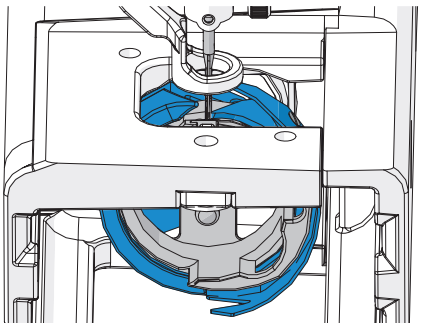
6 As each of the **3 set screws** aligns with the timing cut-out, loosen them with the 2 mm Allen wrench.



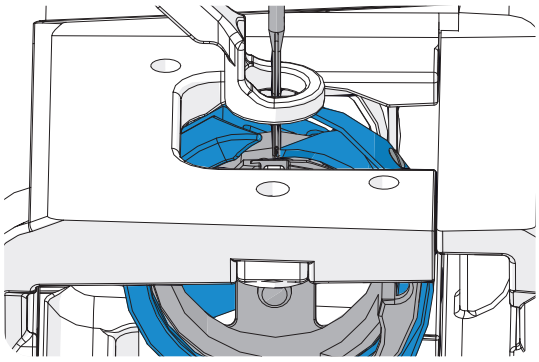
7 The **outside** part of the hook assembly (shown in blue) now rotates by hand. Turn the outside part of the hook assembly so that the **hook** is at the top.



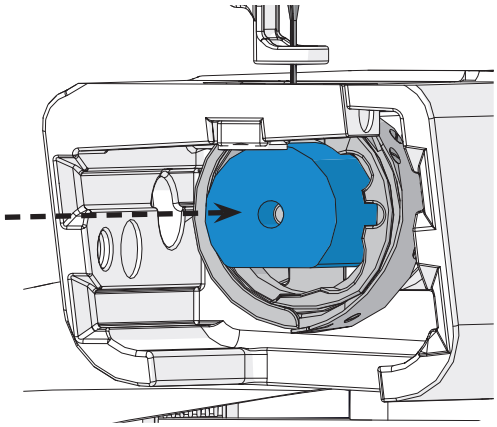
8 Carefully rotate the hand wheel clockwise as seen from the front of the machine and drop the **needle** (shown in gray) all the way to the lowest point. Continue rotating the hand wheel the same direction. The needle should begin to raise up.



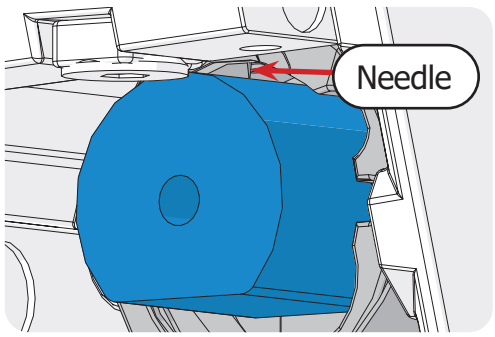
9 Stop raising the needle once the eye is about level with the hook. Do not continue to raise the needle. If the needle reaches the top of its rotation (over the hopping foot), start over at step 8.



10 Slip the **timing spacer** (shown in blue) into the hook assembly.

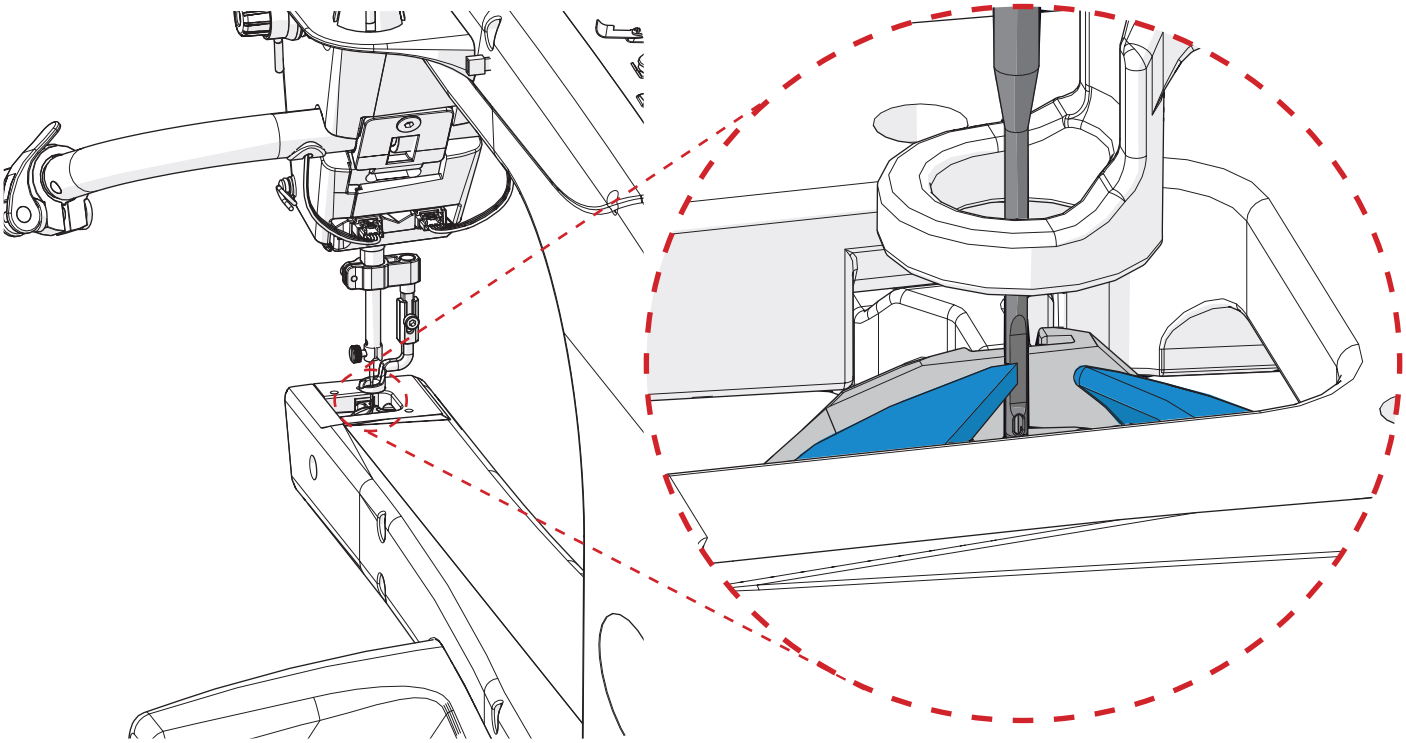


11 Turn the hand wheel the opposite direction to bring the **needle** back down until it rests on top of the timing spacer. Do not let the needle rise to the top before bringing it back down or you will need to repeat steps 8-11.

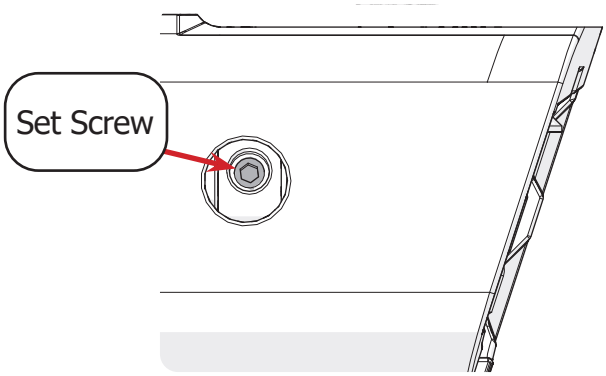


Timing the Machine (Continued)

12 Position the tip of the **hook** (shown in blue) in the middle of the back of the **needle** (shown in gray). This is easier to see from the back of the machine.



13 Push the hook assembly inward (toward the rear of the machine) while tightening the set screw through the timing cut-out. Watch for bending in the needle and listen for a clicking sound that could indicate the needle is hitting the hook.



14 Remove the timing spacer from the machine.

15 Turn the hand wheel a full rotation to ensure the needle does not hit the hook assembly at any point.

16 Tighten the two remaining set screws through the timing cut-out. The needle plate and bobbin case can be reinstalled.

Appendix

This section of this manual covers additional information on quilting with your machine.

Choosing Your Needle

Using the wrong type of needle, or using a needle that is bent, broken, or blunt, can damage the fabric, the machine, and needle. For best results:

- Use the recommended needle style for your machine (see below).
- Use the needle size appropriate for the weight and type of thread you're using (see below).
- Never use a needle that is dull, bent, burred, or damaged.
- Use multi-directional needles.
- Change your needle after 8 hours of use and at the beginning of each project.

Needle Style

The following are the recommended needle styles for your machine:

- DPx5 MR
- 135x17 MR
- DPx17 MR
- 135x17 SAN 11
- 3355 MR

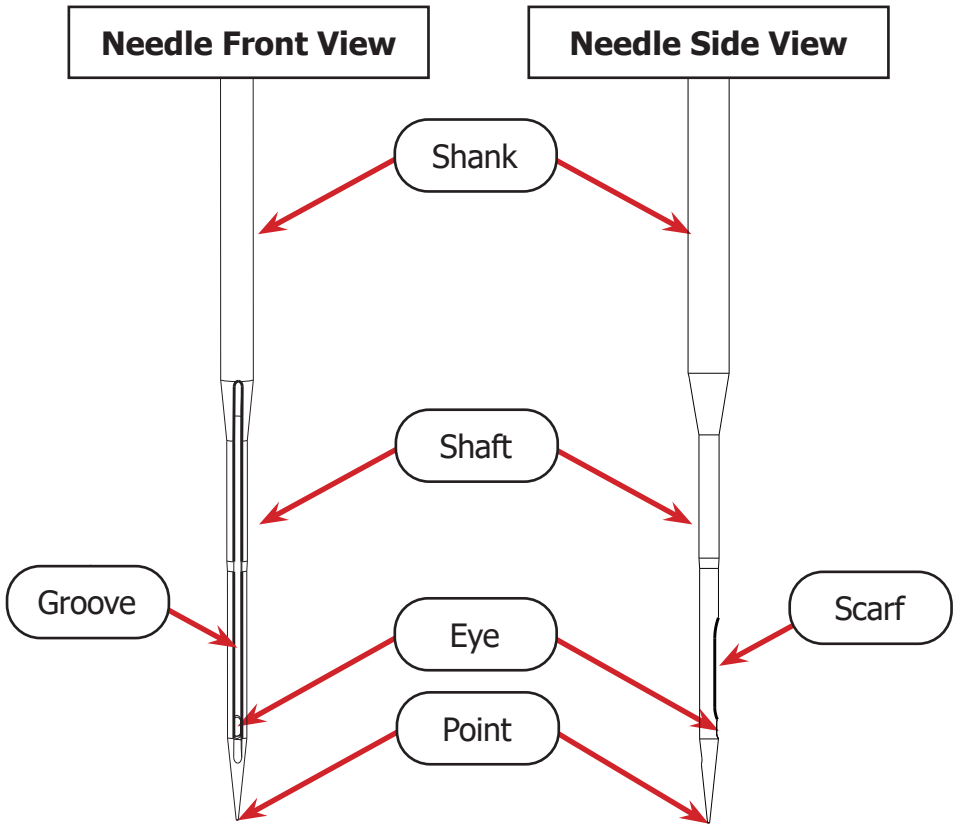
Needle Sizes

Choose the size of your needle based upon the thread you're using. Thicker thread requires a thicker needle. Remember, the thicker the thread, the lower the thread weight (wt.) number.

Needle Size	Thread Size and Type
14 / 90	• mono-filament • 100 wt. silk • 60 wt. polyester
16 / 100	• mono-filament • 60 wt. polyester or cotton • 50 wt. cotton
18 / 110	• 50 wt. polyester • 40 wt. cottons and polyester • 30 wt. cotton and polyester
20 / 125	• 30 wt. or heavier of any thread

Choosing Your Needle (Continued)

Needle Diagram



- **Shank:** Where the needle bar grasps the needle.
- **Shaft:** The long, narrow part of the needle. Needle size is based upon the diameter of the needle shaft.
- **Groove:** Reaching from the top to the bottom of the needle shaft, the groove allows thread to pass through the fabric more easily and without getting damaged.
- **Eye:** Hole near needle point where the needle is threaded.
- **Scarf:** A cut-away on the back of the needle that allows the needle to fit smoothly within the hook assembly when quilting.
- **Point:** The sharp end of the needle. Choose the type of needle point to fit your project, and always replace your needle once the point is dull.

Choosing Your Thread

Choosing the best thread for your project is just as important as choosing the correct needle. Good thread is strong and can pass the "Yank Test" (see "Threading the Machine" on page 31). It holds its color well over time (colorfastness), and uses long fibers (extra-long staple) that resist pilling or creating lint.

Thread type and size determines not only which needle size to choose and what the thread tension must be set to on your machine, but also how visible the thread is on the project.

For best results:

- Use a cone-style thread unless you have the thread spool accessory for your machine.
- Test the strength of thread before use with the "Yank Test" (see "Threading the Machine" on page 31).
- Practice using new thread on spare quilting materials to find the ideal thread tension. Write this information down and store it with your thread for later reference.
- Keep thread out of sunlight to prevent fading, and do not store near extreme temperatures.
- Select thread that is ideal for the fabric you're using (see the chart below).
- Avoid using different types of thread for the top thread than you're using for the bottom thread.

Thread Type Guide

Threads can be multiple strands, called ply, spun together, or it can be a single ply. The fibers that make up the ply can come from many sources, but the most common threads used in quilting are made from cotton, polyester, and silk. The unique properties of each material make some threads better suited for use on some fabrics than others.

Thread Type	Ideal Fabric
Cotton	• Cotton • Linen • Rayon
Polyester	• Knit or Stretch • Woven synthetic
Silk	• Silk • Wool • Basting thread for all fabrics

Choosing Your Thread (Continued)

Thread Size

The thickness of the thread is called the weight (wt.). This number is usually stamped on the edge of the top or bottom of the thread cone. Notice that as the thread becomes heavier and thicker, the weight decreases:

- 60 weight: Very thin, fine thread that will blend in to the fabric.
- 40 weight: Thicker thread that will show up on the fabric.

Note: choose matching thread weight and type when selecting top and bottom (bobbin) threads.

Tip: Not all manufacturers will have the same sizing method for their thread. Threads can be measured by weight, tex, denier, or scaling that is unique to its brand. Take the time to understand how the sizing works for a brand you're considering, and keep a few common sewing rules in mind:

- The thicker the thread, the larger the needle required. A needle that is too thin can shred thread.
- The thinner the thread, the smaller the needle should be. A needle that is too large will cause uneven stitching and can leave holes in the fabric.

Thread Processing

Sometimes thread is processed to change its properties. The chart below lists the processes common to cotton and polyester. No extra processing or treatments are typical for silk.

Thread Type	Processing
Cotton	• **Mercerized**: Treated to improve strength and colorfastness. • **Glazed**: Waxed or coated to give a polished appearance. The coating may rub off and build up in machine. • **Gassed**: Exposed briefly to a gas flame to burn away fuzz and lint, giving a smooth appearance.
Polyester	• **Lubricated**: Treated with lubricant to reduce friction. Avoid thread that is oily to the touch. • **Bonded**: Treated with resin to increase strength. This is typically used for heavy-duty applications, such as upholstery.

Our Recommended Thread

Finesse thread is specially-designed for quilting by the Grace Company. It can be used with domestic (sewing) and quilting machines, and comes in 60 colors.

- 100% Polyester, 3-ply thread
- 1,500 yards mini-cone
- 50 wt.
- 110/18 or 100/16 quilting machine needle
- Topstitch 90/14 sewing machine needle

3283 Snow White	3293 Charcoal	2979 Rainbow	2989 Prism	2999 Cherry Blossom	3009 Deep Forest Green
3284 Pearl White	3294 Midnight Blue	2980 Sunny Spring Day	2990 Tropical Sunset	3000 Candy Apple	3010 Vintage Turquoise
3285 Light Wool	3295 Obsidian	2981 Strawberry Lemonade	2991 Aurora Lights	3001 Pomegranate	3011 Seaside Teal
3286 Ice Blue	3296 Marigold	2982 Pastels	2992 Mango Salad	3002 Dusk Rose	3012 Ocean Wave
3287 Pink Rose	3297 Leafy Green	2983 Raspberry Ice	2993 Camp Fire	3003 Cotton Candy	3013 Bright Blue Sky
3288 Lilac	3298 Blue Sapphire	2984 Circus Tent	2994 Mountain Jungle	3004 Tangerine Punch	3014 Lavender Blossom
3289 Light Sand	3299 Magenta	2985 Twilight Pink	2995 Desert Flower	3005 Grapefruit	3015 Amethyst
3290 Thicket Brown	3300 Amber	2986 Mauve Orchid	2996 Primary School	3006 Lemon Zest	3016 Mountain Mist
3291 Desert Tan	3301 Royal Purple	2987 Blueberries	2997 Mojito	3007 Light Spearmint	3017 Riverbed Slate
3292 Smokey Quartz	3302 Ruby Red	2988 King of Atlantis	2998 Florence	3008 Green Tea	3018 Canyon Shale

Choosing Your Fabric and Batting

Fabric

Some fabrics are not recommended for use with the quilting machine. Thick fabrics, such as denim or leather, have a lot of resistance that can bend or snap a needle, and misalign or break internal machinery. When quilting, avoid any fabrics that are difficult to pierce, and take care that the fabric layers of the quilt are well balanced.

Batting

To choose the best batting for your project, consider the look and feel of the quilt that you're going for. Batting thickness is measured by its loft. A low loft batting is thinner and lighter, ideal for a quilt with a flatter appearance. High loft batting should be used if a fluffy, full quilt is the goal.
Typically, wool batting is the thickest batting while bamboo is the lightest. Wool provides the most warmth, followed by synthetic batting like polyester, and then natural plant-based fibers like cotton and bamboo.

Troubleshooting Guide

Issue	Cause(s)	Solution
Machine won't turn on.	Loose cables	Check that all cables are securely plugged in (page 25).
	Machine switch is off	Check power button is pressed down on right side (page 25).
	If problem persists, please contact a Grace Company support technician. Call **(800) 264-0644**.	
Stitches are skipped.	Damaged needle	Check needle (page 54).
	Machine improperly threaded	Check that all tensioners and guides were threaded correctly (page 31).
	Bobbin wound or threaded incorrectly	Check that the bobbin was inserted the correct direction in the case (page 29).
	Incorrect thread tension	Adjust top thread tension (page 44). Adjust bottom thread tension (page 29).
	Hopping foot incorrect distance from needle plate	Check hopping foot height distance with height tool (page 57).
	If problem persists, please contact a Grace Company support technician. Call **(800) 264-0644**.	
Thread is breaking.	Damaged needle	Check needle (page 54).
	Incorrect thread tension	Adjust top thread tension (page 44). Adjust bottom thread tension (page 29).
	Machine improperly threaded	Check guides and tensioners for accidental double-wrapping (page 31).
	Stitching in place too long	Keep machine moving to avoid stitch build-up in one place, or switch to regulated precise quilting mode (page 40).

Issue	Cause(s)	Solution
Thread is breaking.	Bobbin inserted incorrectly	Check bobbin is the correct direction in the case and inserted firmly (clicked) into the machine (page 29).
	Debris on tension discs	Clean the machine (page 51).
	Burred bobbin	Check bobbin for sharp edges. Contact your dealer to replace if needed.
	Needle plate is rubbing needle	Check that needle plate is centered and does not hit needle (page 62).
	If problem persists, please contact a Grace Company support technician. Call **(800) 264-0644**.	
Machine is running loud.	Machine and/or hook assembly needs oiling	Oil the machine and hook assembly (page 51).
	Bobbin winder is on	Check that bobbin cam is off (away from bobbin stand).
	If problem persists, please contact a Grace Company support technician. Call **(800) 264-0644**.	
Thread is bunching up in hook assembly (bobbin case area).	Bobbin wound or threaded incorrectly	Check that the bobbin was threaded correctly and inserted the correct direction in the case (page 29).
	Machine improperly threaded	Check that all tensioners and guides were threaded (page 31).
	Incorrect thread tension	Adjust top thread tension (page 44). Adjust bottom thread tension (page 29).
	Bobbin case has damaged or missing spring	Check inside bobbin case to see spring. Contact your dealer to replace if needed.
	If problem persists, please contact a Grace Company support technician. Call **(800) 264-0644**.	

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